INFORMATION SEEKING BEHAVIOUR OF USERS : A COMPARATIVE STUDY OF ENGINEERING COLLEGES OF KOTA AND UDAIPUR DIVISION

A THESIS
Submitted for the Award of
Ph.D. Degree
in the
Library and Information Science
(Faculty of Social Science)
to the
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By
PAYAL JOSHI

Under the Supervision of
Dr. UMESH KUMAR AGARWAL
Deputy Librarian (Retd.)
Mohan Lal Sukhadia University, Udaipur

2016

Dedicated

to

ॐ *Shree Krishna*

DECLARATION

I **Mrs. Payal Joshi** D/o. **Late Sh. Gopal Krashna Joshi** resident of Kota hereby declare that the research work incorporated in the present thesis entitled **"Information Seeking Behaviour of Users: A Comparative Study of Engineering Colleges of Kota and Udaipur Division"** is my own work and is original. This has not been submitted to any University for the award of a degree. I have properly acknowledged the material collected from primary and secondary sources wherever required. I solely own the responsibility for originality of the entire content.

Date : 28th October, 2016 (Dhan teras)
Place : Kota

Payal Joshi
Research Scholar

CERTIFICATE

It is certified that the

(i) Thesis entitled "**Information Seeking Behaviour of Users: A Comparative Study of Engineering Colleges of Kota and Udaipur Division**" submitted by PAYAL JOSHI is an original piece of research work carried out by her under my supervision.

(ii) Literary presentation is satisfactory and the thesis is in a form suitable for publication

(iii) Work evidences the capacity of the candidate for critical examination and independent judgment.

(iv) She has fulfilled all the necessary requirement for the submission of thesis.

Date: 28th October, 2016 (Dhanteras)
Place: Kota

Dr. Umesh Kumar Agarwal
Deputy Librarian (Retd.)
Mohan Lal Sukhadia University,
Udaipur

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Payal Joshi

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LIST OF SYMBOLS AND ABBREVIATIONS

ACM	-	Association for computing machinery
ASCE	-	American society of civil engineers
ASME	-	American society of mechanical engineers
B.Tech	-	Bachelor degree of Technology
BHEL	-	Bharat Heavy Electrical Limited
CAS	-	Current Awareness Service
CD	-	Compact Disc
DELNET	-	Developing Library Network
DVD	-	Digital Versatile Disc or Digital Video Disc
e-resources	-	Electronic Resources
Et. al.	-	et alii (‘and others’)
Etc	-	Etcetera
ICT	-	Information Communication Technologies
IEEE	-	Institute of Electrical And Electronic Engineers
ILL	-	Inter Library Loan
INFLIBNET	-	Information Library Network
ISB	-	Information Seeking Behaviour
M.Tech	-	Master of Technology
Min	-	Minimum
Max	-	Maximum
N	-	Numbers
OPAC	-	Open Access Catalogue
PG	–	Postgraduate
SAE	-	Society of Automotive Engineers
SD	-	Standard Deviation
SDI	-	Selective Dissemination of Information
St.Dev.	-	Standard Deviation
UG	-	Undergraduate
VCD	-	Video Compact Disc

CHAPTER 1

THE PERSPECTIVE

CHAPTER

1

THE PERSPECTIVES

1.1 INTRODUCTION

Information is an important and vital source to develop a person in terms of personality, time management, intellectual learning and above all success in life. Information is in fact a decisive factor in the development of the society in the recent era. With the advancement of technology, urbanization and globalization, the role of information is for the enhancement of the knowledge of people in every sphere and sector for earning and growth.

Every person seeks and makes use of information in daily life yet the channel through which one gets the information and the factors encouraging information seeking is related to the psychology of consumer behaviour, common skill, approach to information seeking devices, places, urgency and requirement of information and selection of need based information out of enormous information available globally. Effective method of usage of information determines the suitability of information for the fulfillment of needs.

The perspective of effective usage of information depends mainly upon the attitude of a person normally called as behaviour. When the information seeker applies in the process of seeking information, several problems arrive during the information seeking process if the information in print, digital and visual forms is enormous on single need. At this point the behaviour and the appropriate application of attitude becomes the key factor to enable the seeker not to be caught in the complex web of information especially of irrelevant information.

The libraries play a vital role in providing information related to academics, research and general aspect including employment possibilities, personality

development and available opportunities for the students and teachers both. Libraries also play very important role in upgrading the skills and getting the collaborative partners from other institutes across the globe with equal or more opportunities for excellence in academics and research. The libraries provide various resources such as text books, reference books, periodicals, encyclopedias, back volumes, journals, magazines etc. and provide access to these resources in print and digital mode to users.

In the current scenario, looking to the employment opportunities in technical fields large number of engineering colleges are being established in India in general and Rajasthan in particular which have attracted thousands of young minds towards technical education. To become a quality technical manpower, distinguish innovator and best academic achiever students prefer library resources as a prime support for achieving the endeavors. Two types of information seeking behaviour are mainly reported earlier (i) exploratory behaviour adopted for keeping up-to-date knowledge on a particular aspect or in general or obtaining background information and (ii) obtaining reciprocities information illustrating new aspects of the problem from a variety of sources.

This observation has given way to conduct a systematic research study on the information seeking behaviour of students of few engineering colleges in Kota and Udaipur division. The psychology of the users, the information seeking behaviour, assessment of user needs and the utility of information resources and the development of libraries are the key aspects covered in the present study. The present chapter focuses on the fundamental aspects of the study and a brief introduction of the problem.

1.1.1 Information

Meaningful and processed data is called Information. We receive information throughout the day. When we awake, we read newspapers to get information in the form of current news, house wives want and get information for improving their cooking skills, at the workplace businessmen get information to expand their business, teachers get information from the deferent kind of sources

like bibliography, journals, internet, books to complete their teaching tasks, students search and get information to complete their assignments given by the teachers.

Some attempts at defining the term 'Information is as follows :

According to **Shannon and Weaver** (1949) "Information is any stimulus that reduces uncertainty and a purely quantitative measure of communicative exchanges."

According to **Shera (1972)** Information is that which is transmitted by act or process of communication. Information could also be a massage, a signal, a stimulus assuming a response in the receiving organism and therefore possesses response potential. Its motivation is inherently utilitarian. It is instrumental and usually is communicated in an organized or formalized pattern, principally because such formalization increases potential utility.

Chen and Hernon (1982) defined information as "Knowledge, ideas, facts, data and imaginative works of mind which are communicated formally and/ or informally in any format."

Khandare (2013) explained that the simple meaning of information can be a statement, opinion, fact, concept of ideas, or an association of statement, opinion, or ideas etc.

1.2 INFORMATION NEED

The emergence of information is always needed. A person need any information to complete his/her task and satisfy him/her self in the field of work or allotted assignment. Information search started due to need and Information generated from the need which governs the information searching behaviour of a user.

Wilson (1981) reported in a literature that in earlier times the information need may not be a fundamental need such as the of need of shelter and the need of sustenance, but support a secondary order need which is aroused out of the desire to satisfy the primary need.

According to **Belkin et al. (1982)** Information need can be described as an anomalous state of knowledge.

According to **Grunig (1989)** human need is defined as an 'inner motivational state that brings about thought and action". The definition was subsequently expanded as 'inner states' which may include, for example, wanting, believing, doubting, fearing or expectations **(Liebnau and Backhouse 1990)**.

Singh and Satija (2006) defined that fundamentally the information need is a factual situation in which there exist an interconnection with' information and need. The information is originated if there exists a need or an interest. The content of information is the primary concern for satisfying a need. Information generated and originated on arising a need or an interest becomes available for seeking by several other users also.

Bronstein and Arbib (2008) defined information need as a primary activity of our daily life. People seek information for fulfilling their professional and personal achievements.

1.2.1 Methods of Determining Information Needs

According to **Soper (1990)**, community analysis is one essential and most common method used by librarians to identify characteristics of a target population and to decide what library services and information would be most appropriate for them. The techniques that are used in community analysis include observing environment characteristics, studying demographics, observing patterns of library use and interviewing key informants.

Roger Greer and Martha Hale (1982) additionally supported community analysis as the basic method for determining role of library in fulfilling information need of targeted population. They generated the methods involving data collections and analysis from four perspective demographic community organizations, services and product providing agencies and lifestyles.

Engineering users need information on continuing basis and they are contemplating to be the upmost users as well as manufacturer of information. Based

on the past studies and experience gained during the present research study, the engineering users need information for following purposes :

- To keep up to date with current development
- To prepare the course content of their defined degree
- To complete the assignments
- To get acquainted with the state of new technology
- To keep up with new development in the desired area of research

1.3 CONCEPTS OF INFORMATION SEEKING BEHAVIOUR

The concepts of Information Seeking Behaviour emerged from the broad concepts of user studies which cover a wide range of study related to field of information science and communication studies. In general perspective, the concept of behaviour is basically the set of action applied in distinguishing information needs and seeking required for the information to satisfy the need, to select the right information among the available mass information, to evaluate, to select information and finally use of selected information in the appropriate contest. Initially the concept of information seeking behaviour originated in 1948 at royal society conference where a research paper was presented on the information seeking behaviour since then a variety of research studies have been carried out by various social scientists dealing with information need and information seeking behaviour of both individual and groups of various category which have emerged as totally different concepts.

A large number of studies have been reported on reading habits of different professional groups carried out by various individuals, associations, and institutions from all corners of globe which partially indicate their information needs. They review different research studies on information needs and information seeking behaviour of different groups of people or individual in various countries of the world including South Asian sub-continent. We find enormous publications based on surveys conducted by different researchers to find out the behaviour of students

and teachers in seeking information in education institutions. A review of such studies is presented in chapter 3.

There are several definitions, models and theories to frame concepts of information seeking behaviour. Enormous publications are available on information seeking behaviour of faculty members and students of academic and technical universities located at diversion areas of the globe which are the basis of expansion of the institutions. Knowledge of the information need and information seeking behaviour of the users has been used for expanding the library collection, upgrading and improving library services ineffective fulfilling of the information needs of users. In India with the development of science and technology specially the information and communication technology the demands of the skilled library personnel has grown tremendously.

1.3.1 Information Seeking Behaviour

When a need is felt for anything, more often people take action in order to satisfy that need. Different strategies or modes of action are resorted to. The similar applies for the satisfaction of information need. An individual realizes that he needs information he knows that in all probability the Information will not come to him on its own, therefore he must to go for seeking it. What strategies or processes he resorts to, in order to satisfy the need for information derives his information seeking behaviour. Based on this approach different definitions are evolved for information seeking behaviour.

Chen and Hernon (1982) have defined information seeking as "Information seeking patterns are the paths pursued by the individual in the attempt to resolve a need." According to **Girja Kumar (1990)** "Information seeking behaviour is mainly concerned with needs i.e. what kind of information for what reasons; how information is found evaluated and used.'' **Wilson (1999)** defined information behaviour as the activities a person may engage in when identifying his or her own needs for information, searching such information in many ways, and using or transferring that information as per the need. **Wilson (2000)** also defined

information seeking as "the purposive seeking for information as a consequence of a need to satisfy some goal".

Information seeking behaviour is the application of attitudes through set of actions in order to achieve desired information need. When attitudes and actions are collaborated the performance emerges. Based on the level of performance, the satisfaction level of the acquired information is determined. **Case (2002)** defined information behaviour as "Information behaviour encompasses information seeking as well as the totality of other unintentional or passive behaviours (such as glimpsing or encountering information) as well as purposive behaviour that do not involve seeking such as avoiding information".

1.3.2 New Trends in Information Seeking Behaviour Studies

New trends in information behaviour research are based on psychological aspects of behaviour, seeking and use, information seeking behaviour in digital, social and in organizational settings. In a digital world, now trends in information seeking behaviour are changing as younger generation became more familiar with internet technologies. The present research study is aimed to identify the implications of changing patterns of information seeking behaviour. Library-led information literacy initiatives, initiatives particularly in academic libraries shifted from training users to locate information in printed resources, to use and evaluate electronic full text and other sources. Although users are digitally literate and have highly developed skills in interacting with an online environment for information seeking the requirement of print information is also ever increasing.

1.4 TYPE OF INFORMATION SOURCES IN TECHNICAL DISCIPLINE

- **Books** : Books cover virtually any topic, fact or fiction. For research purposes, books are synthesized to cover all the information on one topic to support a particular argument or thesis. Libraries organize and store their book collections on shelves called "stacks." The uses may be when looking for lots of information on a topic to put a topic in context with other important issues, to find historical information, to find summaries of research

to support an argument. Some books are having common author and editor whereas many are having different authors and editors

- **Journal**: A journal is a collection of articles or research papers usually written by scholars in an academic or professional field. An editorial board reviews articles to decide whether they should be accepted, revised or rejected. Articles in journals can cover very specific topics or narrow fields of research and their uses are when doing scholarly research to find out what has been studied on particular topic to find bibliographies that point to other relevant research.

- **Database:** A database contains citations of articles in magazines, journals, and newspapers. Some database contains abstracts or brief summaries of the articles, while other database contains complete, full-text articles. The database is used when one wants to find articles on particular topic in magazines, journals or newspapers. Some examples of database are Academic Search Complete (a general database), Compendex (an engineering database).

- **Library Catalogue:** A library catalog is an organized and searchable collection of records of every item in a library and can be found on the library home page. The catalogue points towards the location of a particular source or group of sources that the library owns on a topic and the uses are to find out what items the library owns on that topic. And the uses are to find where a specific item is located in the library.

- **Magazine:** A magazine is a collection of articles and images about diverse topics of popular interest and current events. Usually these articles are written by journalists or scholars and are geared towards the average adult. The common uses of any magazine are to find up-to-date information about current events in specified fields and to find out general articles for people who are not necessarily specialists about the topic.

- **Newspaper**: A newspaper is a collection of information about current events usually published daily. It is one of the primary sources available to all individuals at a very nominal cost. With the revolution in information broadcasting electronic newspapers have also been evolved now a day as strongest mode of information seeking. Since there is at least one in every city in hard print and several in electronic form, newspaper is a great source for local information. The broad uses are to find current information about international, national and local events, innovations and to find editorials, commentaries, expert or popular opinions. The examples are Times, Times of India, Rajasthan Patrika, Dainik Bhasker, etc.

- **Encyclopedias**: Encyclopedias is a collection of short, factual entries often written by different contributors who have knowledge about the topic. There are two types of encyclopedias: general and subject. General encyclopedias provide concise overviews on a wide variety of topics. Subject encyclopedias contain in-depth entries focusing on one field of study. Publicly these are used as and look for background information on a topic when trying to find key ideas, important dates or concepts. The examples are African-American Encyclopedia (subject encyclopedia) Encyclopedia Americana (general encyclopedia) World Book Encyclopedia Britannica Online, Encyclopedia of Computer Science and Technology etc.

- **Web:** The Web allows one to access most types of information on the internet through a browser. One of the main features of the Web is the ability to quickly link to other related information. The Web contains information beyond plain text, including sounds, images, and videos etc. The important thing to do while using information on the internet is to know how to select and evaluate relevant information. Some of the uses are to find current information, to find information about companies, to find information from all levels of government - federal to local, to find both expert and popular opinions, to find information about hobbies and personal interests. Now there are several popular search engines viz. Google, Orkut, Yahoo, www.electricalindia.com, IEEE Explore etc. to provide information in all desired forms.

1.5 MODELS FOR INFORMATION SEEKING BEHAVIOUR

Many **models** have been framed in order to explain the information seeking process. A model is a framework for thinking about a problem and may evolve into a statement of the relationship among theoretical propositions. In a simpler manner, models are statement often in the form of diagrams that attempt to describe an information seeking activity along with the causes and consequences of that activity or the relationship among stages for information seeking behaviour.

1.5.1 Wilson's Model

(i) **Wilson's model of information behaviour (1981)**

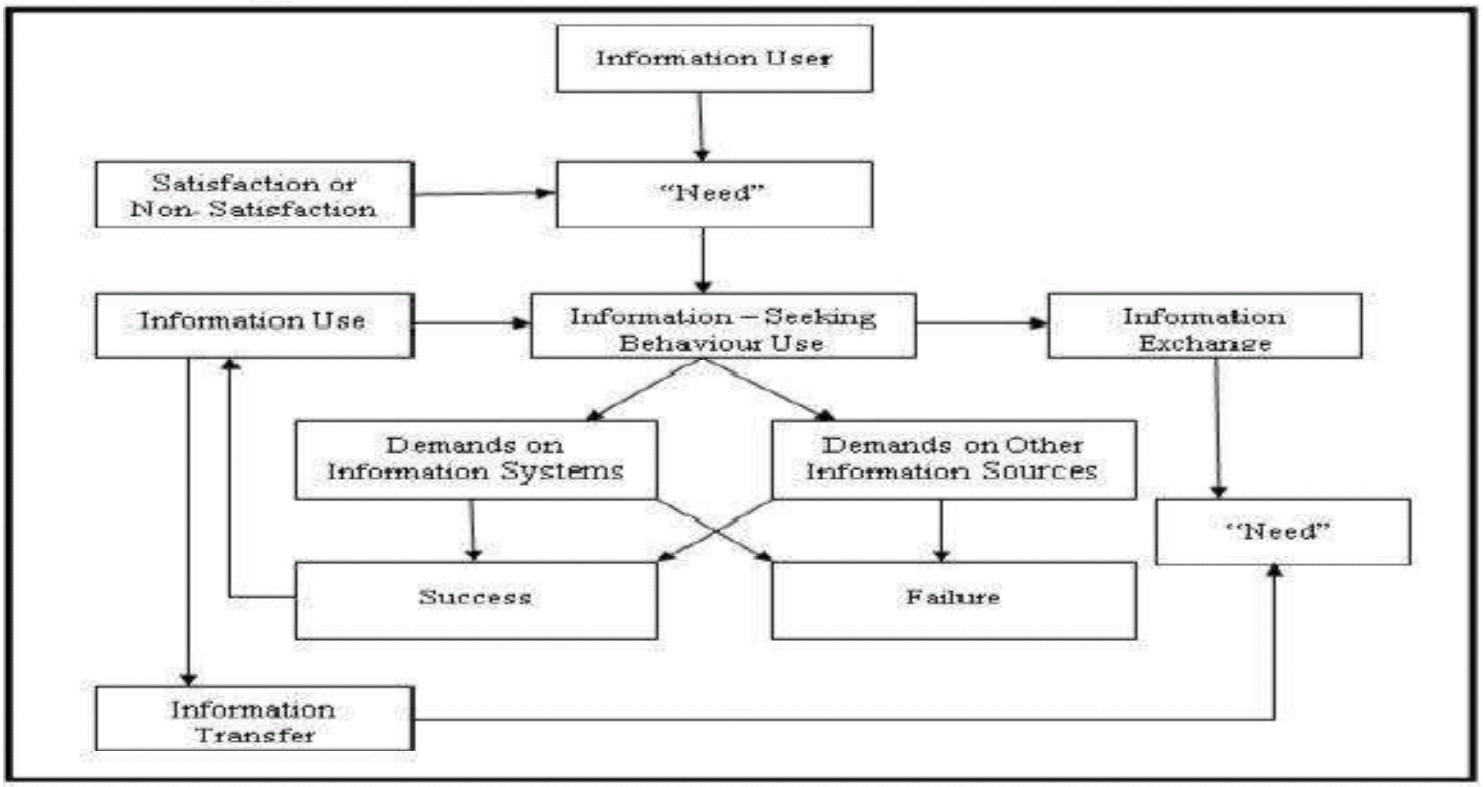

Figure 1.1 : Wilson's Model of Information Behaviour (1981)

Some of the models that have been developed so far are given below :

Wilson (1981) has provided the following model to explain the process (Figure 1.1) The model suggests that information seeking behaviour arises as a consequence of a need perceived by an information user who in order to satisfy that need makes demands upon formal or informal information sources or services which result in success or failure to find relevant information. If successful, the individual

then makes use of the information found and may either fully or partially satisfy the perceived need, if he fails to satisfy the need, he will have to start searching again. The model also shows that part of the information-seeking behaviour may involve other people through information exchange and the useful information collected may be passed to other people as well as being used by the person himself or herself.

(ii) **Wilson's revised model of information behaviour (1996)**

In 1996, Wilson revised his earlier model after drawing upon research from a verity of field other than information science, including decision making, psychology, innovation, health communication and consumer research. While the basic framework of the 1981 model remained as such the revised model had a few additions as follows (Figure 1.2).

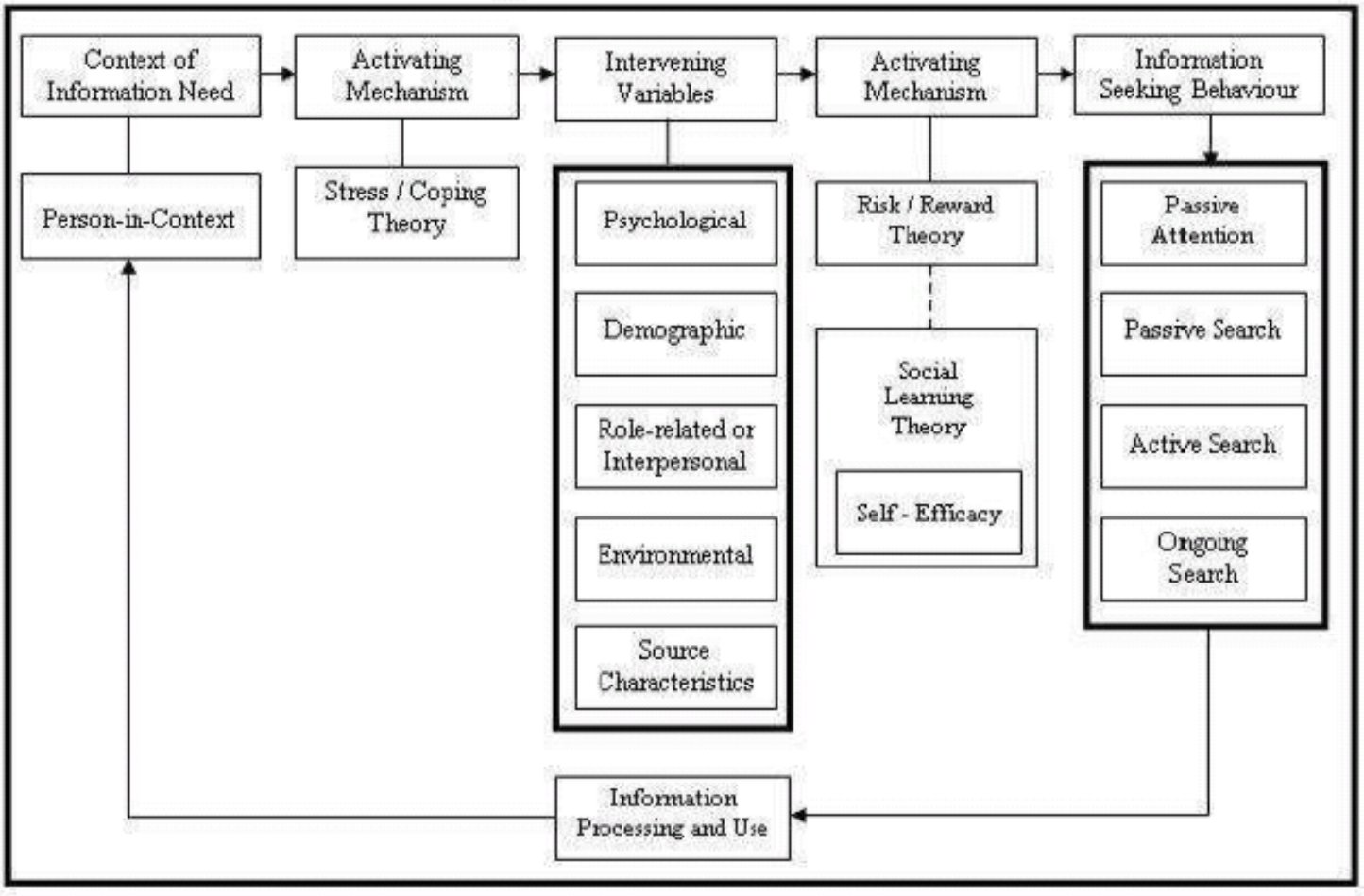

Figure 1.2 : Wilson's revised Model of Information Behaviour (1996)

1.5.2 Kirkelas's Model of Information Seeking (1983)

The Krikelas model (1983) is an early model and is applied widely. The model contains approximately thirteen components. It is a general model that is applicable to all spheres of life. In the model the twin actions namely information gathering and information giving are given at the top priority. The information gathering process is carried out based on the deferred needs which are kindled by an event or the surroundings or happening of the person who seeks information. The model shows that the gathered information is directed to memory or personal files. Model is presented in Figure 1.3.

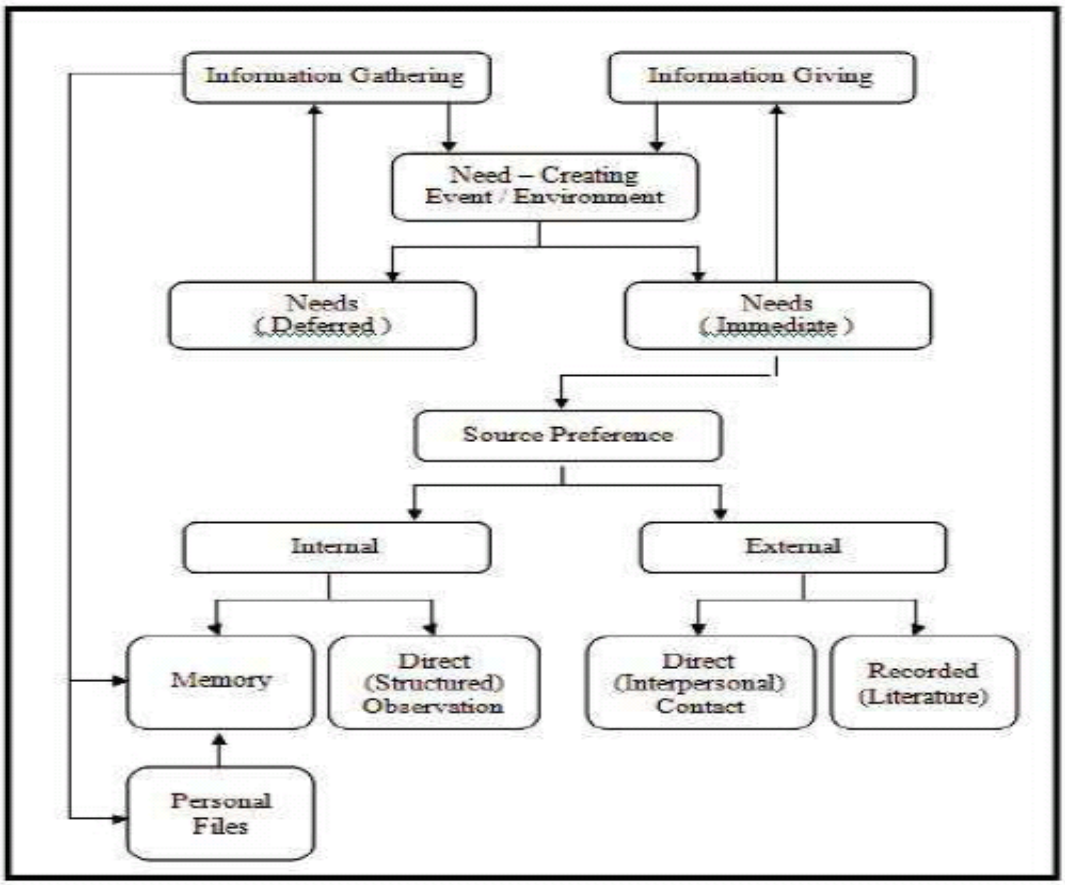

Figure 1.3 : Kirkelas's Model of Information Seeking (1983)

The another action termed as 'information giving' which is carried out based on the immediate needs for which the information seeker desired to select preference i.e. internal or external source of preference. When the internal source leads to memory and personal files, the external source makes it to direct (interpersonal) contact and recorded material (literature). One appealing aspect of the Krikelas's

model is its simplicity. The model is a simple; one-dimensional flowchart in which all of the arrows travel in one direction and one part of the process does not encompass another (Case 2002).

1.5.3 Dervin Models

(i) Dervin's Sense Making Model (1983)

Dervin's sense making model is a set of assumption, a theoretical perspective, a methodological approach, a collection of research methods and practices. This model is designed in a form of a triangle to cope with information perceived and contains four constituent elements- (i) a situation in time - a space which defines the information problems arise, (ii) a gap - which identified the difference between the contextual situation and desired situation; (iii) outcome - the consequences of the sense making process; and (iv) a bridge, which is a mean of closing the gap between situation and outcome.

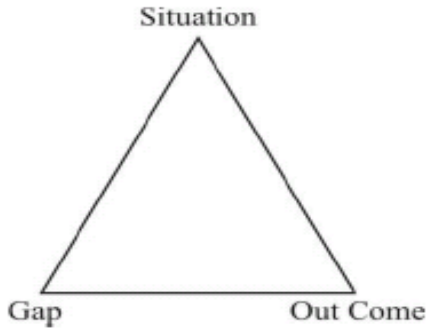

Figure 1.4 : Dervin's sense-making Triangle (1983)

(ii) Dervin's Sense Making Model (1996)

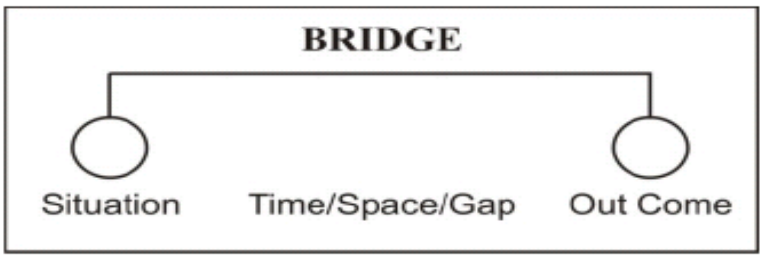

Figure 1.5 : Dervin's sense making model redrawn (1996)

However, the use of bridge metaphor may be more preferable to present the model as shown in Figure 1.5.

1.5.4 Johnson's Model of Information Seeking Behaviour (1987)

There are seven factors under three headings given within the Johnson's model (1987). The fundamental process flows from left to right. The four factors under the heading antecedents are grouped under two sub headings which are termed as background factor and personal relevance. The background factor includes the factors of demographics and personal experience and the personal relevance factor includes salience and beliefs. The second heading Information carrier factors include characteristics and utilities of the information channels selected and employed by the seekers. The last heading is information seeking actions. The model is characterized as Figure 1.6.

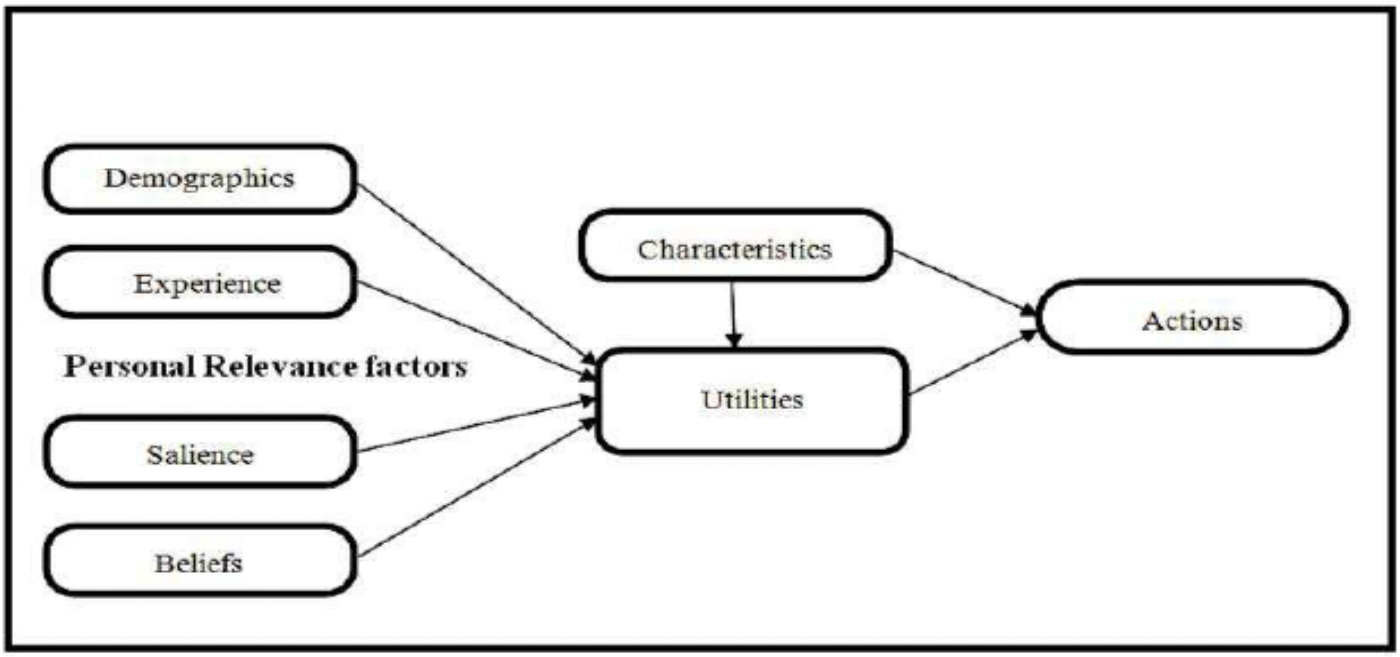

Figure 1.6 : Johnson's Model (1987)

1.5.5 Ellis's Behavioural Framework (1993)

Ellis et al., used term features rather than stages in information seeking. The features according to them are as follows:

- **Starting:** The meaning employed by the user to begin information seeking for example asking a knowledge colleague.
- **Chaining:** following footnotes and citations in known materials or forward chaining from items through citation indexes.

- **Browsing:** semi-directed or semi-structured searching.
- **Differentiating:** using known differences in information sources as a way of filtering the amount of information obtained.
- **Monitoring:** keeping up-to-date or current awareness searching.
- **Extracting:** selectively identifying relevant material in an information.
- **Verifying:** checking the accuracy of the information.
- **Ending:** tying up of loose ends through a final search.

The model is shown in Figure 1.7

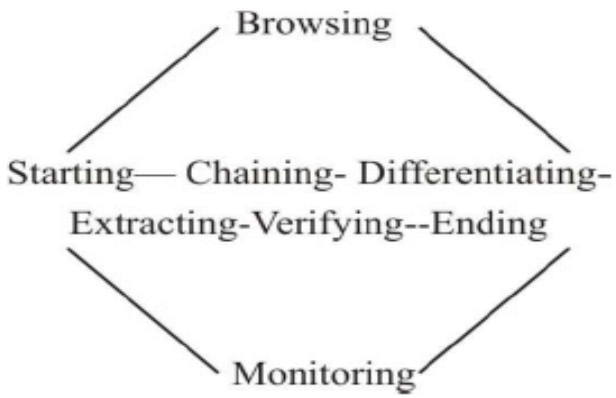

Figure 1.7 : A Stage Process Version of Ellis's Behavioural Framework

1.5.6 Leckie's Model of Information Seeking (1996)

The Leckie's model (1996) concentrates on mainly professionals such as engineers, doctors and lawyers. This model features six factors connected by arrows flowing down from the top. When five factors are unidirectional one factor is bidirectional. According to this model the factor 'work role' permits 'tasks' to perform. The performance of the tasks creates information need. The model shows information seeking behaviour as a bidirectional arrow labeled as 'information is sought'. The factor termed as 'outcomes' as the end result which connects the factors 'source of information'. 'awareness of information' and 'information is sought' through feedback arrows. The model is represented as Figure 1.8.

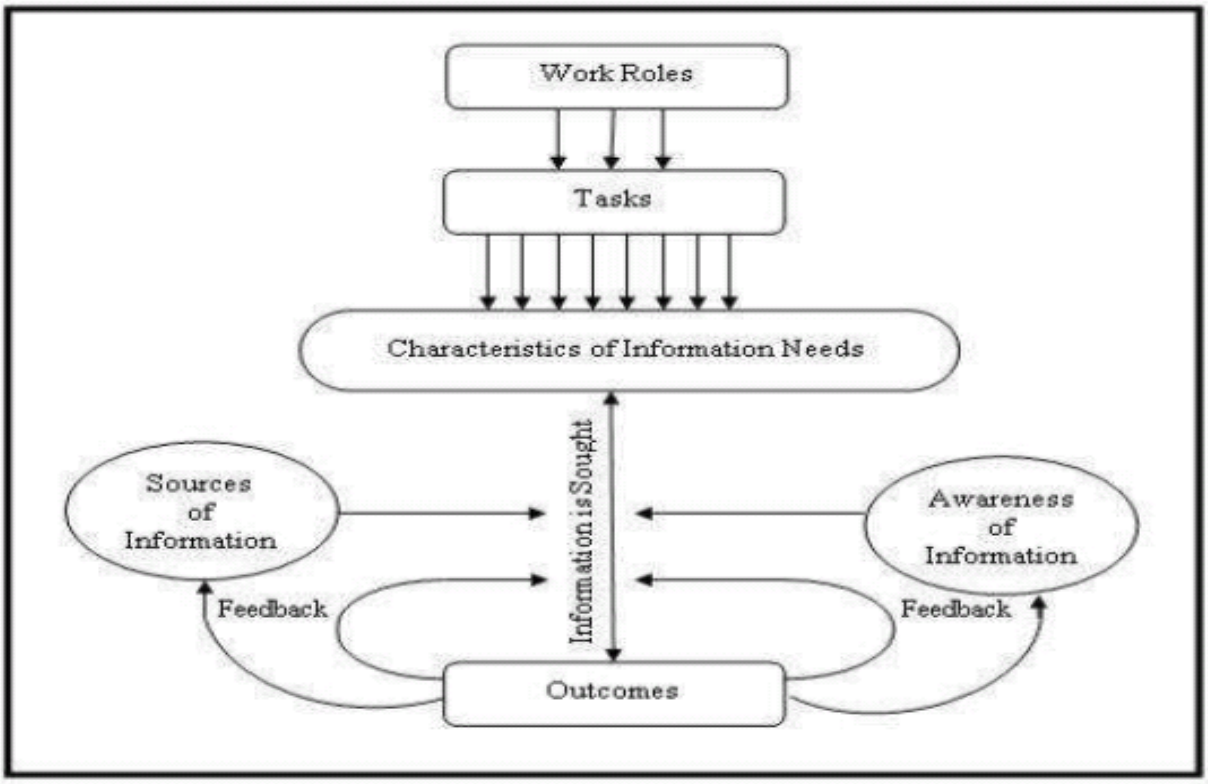

Figure 1.8 : Leckie's Model of Information Seeking (1996)

1.5.7 Nonlinear Model of Information-Seeking Behaviour (2004)

Ongoing analysis of the emergent concepts and their relationship to each other developed in clusters of behaviours, intervening factors, and contexts. The concepts were grouped into three core categories, Opening, Orientation, and Consolidation around which analysis continued to develop definitions, functions, information needs, and the contexts attributable to them. The new model of interdisciplinary information-seeking is represented in terms of three core processes and three levels of contextual interaction in Figure 1.9. The subsequent sections begin with the outer layers of the illustration and move towards the core processes of opening, orientation, and consolidation, culminating in a summary of the entire model.

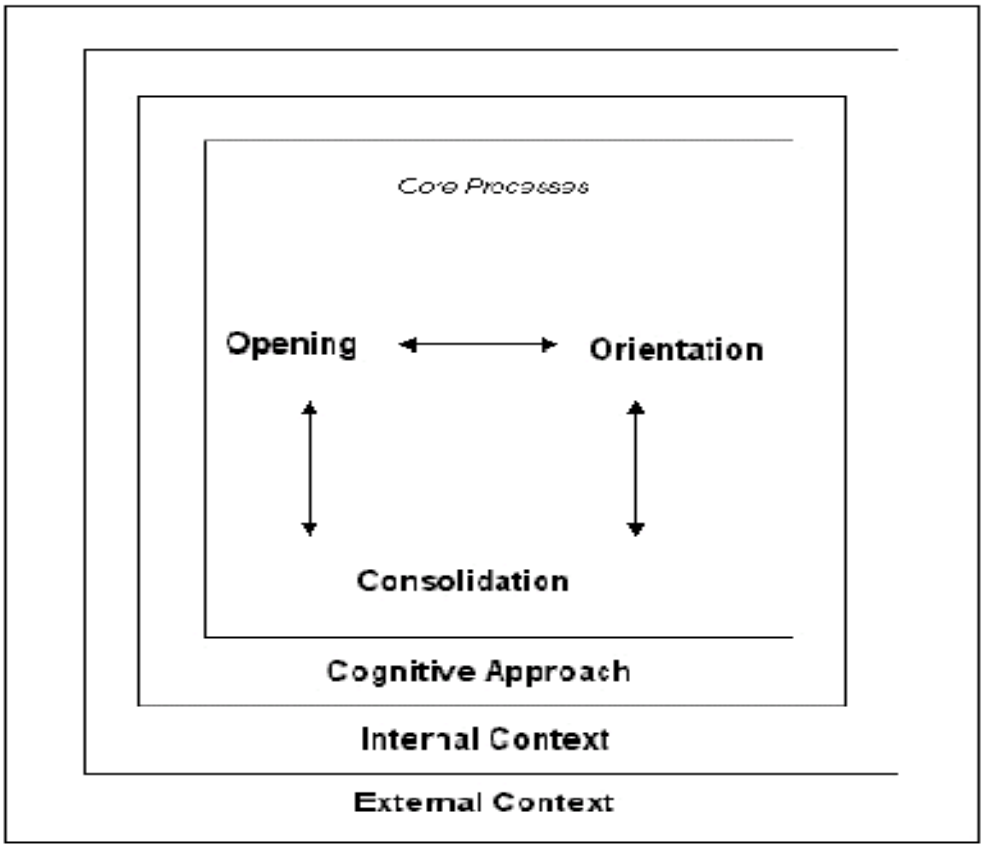

Figure 1.9 : Nonlinear Model of Information Seeking Behaviour (2004)

1.6 READING HABIT

Reading habit is an essential and important aspect for creating the literate society in this world. It shapes the personality of an individual and it helps them to develop the proper thoughtful methods and making new ideas.

Behaviour is any activity done by a living organism. Human behaviour includes mental activities, consciousness, muscular function, and the like. When the similar type of behaviour is repeated several times by an individual, it becomes habit of that particular individual. An individual can know more about his own environment if he does efforts to enhance his/her knowledge through reading books, newspapers and magazines or any other means.

This is a universally accepted fact that books are best friends but it is true, in case what individual has good reading habit. The term 'reading habit' refers to the behaviour, which expresses the likeness of reading of individual types of reading, and tastes of reading (Sangkaeo, 1999). It is considered as one of the most effective processes of conscious learning. It is a pattern with which an individual organizes

his or her reading. Reading is important for everybody in order to cope up with new knowledge in a changing world that of the technological age.(Tella and Akande 2007)

According to Panigrahi and Panda (1996), "a creative and pragmatic education involves the habit of personal investigation requires self-study to be followed by self-thinking and analysis". Self-study, i.e. reading at one's own accord requires a habit which is technically known as reading habit.

During search for the required information user focuses his complete attention on reading whether the information is present in print formats or digital formats. Reading habit play very important role in information searching and seeking behaviour of student and faculties of every discipline. It is very important in engineering users also to develop ability to interpret literary works.

Reading is very important, and as a favored leisure time activity for many students of literature. Whereas engineering user read more, in search of information in subject area and for research work, than for enjoyment. They also prefer to read books, periodicals etc. of their subject related so that they are able to know about the latest research done on a particular subject. Today individuals believe that they will explore from traditional to electronic world which will require little reading less thinking and writing but it is very far from the truth. The technology has enabled reading to be more timely and somewhat non-linear by using devices such as computers, internet and wireless shows without any hard copy. The faculties and students in the engineering colleges requires careful reading habits and strong grasping skills so that they are able to analyse, interpret and explain terms and process.

1.6.1 Reading Habit Promotion

As soon as an individual, is exposed to interesting reading and develop the interest in books, finds it easier to explore the wealth of human experience and knowledge. It is possible that one can get an opportunity of getting in touch with books and from reading habit at the later years. It will be reflected that he/she has

started spending more time for reading books and also found that the speed of reading has increased.

Reading behaviour can be expressed as the likeness for reading of individuals. Reading and instruction can satisfy the need for information. People read information materials, which might help them, learn more about their occupations or about their hobbies. However, the number of those who know how to read but do not read enough is increasing.

The task encouraging positive reading interest to foster to live for reading which will promote reading culture among students. However, role of libraries and librarians can play a significant motivation in the promotion of reading habits in any society.

1.6.2 Role of Libraries and Librarians

Libraries are a mean to stimulate and develop the reading interest and librarians play important roles in promotion of reading habits. Some important points, to be taken care by the librarians to promote the reading habits, shall be as follows :-

- The librarian should develop, among the readers a pleasant and positive attitude towards reading.
- Librarian should serve the course of education formally. He/she shall take an opportunity to go out and tell the public what they have in their libraries and shell find out the interest of the readers' shell, improve and keep improving the set-up of the library to encourage readers spend long hours in the library.
- Librarian shall make the library attractive for user's popularity.
- Librarians shall attract the users to use variety of resources as per users' choice and shall promote reading culture among faculty and students.
- It is prime duty of library staff to make silent and supportive atmosphere for reading within the library that inspire users for reading in library and develop reading habit.

1.7 MAIN OBJECTIVES OF THE RESEARCH WORK

The main objectives of the proposed study are to evaluate the information seeking behaviour and use pattern of information resources of users. The detail objectives are given below.

(i) To explore the information needs of the users of the engineering colleges of Kota and Udaipur Division (Rajasthan).

(ii) To know the availability and user's awareness of different types of resources in the engineering colleges of Kota and Udaipur Division (Rajasthan).

(iii) To analyze and evaluate the existing ICT facilities/program in engineering colleges users, for using latest ICT facilities.

(iv) To identify the different practices and methods used by faculty members and students in retrieving the information from ICT sources.

(v) To study the needs, information seeking behaviour, awareness, utilization and library use pattern of engineering colleges in comparative context of Kota and Udaipur Division in Rajasthan.

(vi) To identify the level of satisfaction pertaining to the use of resources by the faculty members and students of engineering colleges of Kota and Udaipur Division (Rajasthan).

(vii) To recommend the suitable measures and means to improve the services being derived from resources for the development of libraries of engineering colleges of Kota and Udaipur Division (Rajasthan) and to suggest an information dissemination system for providing better services to library users.

1.8 HYPOTHESIS

Hypothesis is usually considered as the principle instrument in research. The following hypotheses have been formulated for the proposed study.

(i) Available resources are not adequate as per the demand or not easily accessible in engineering college libraries in Rajasthan.

(ii) The engineering faculties and students show no significant variation in their perception of importance regarding information seeking behaviour in use of available ICT resources in colleges/universities and research institutes.

(iii) The low incidence of information seeking behaviour among stakeholders is not related to availability of adequate trained/semi/untrained Library staff in colleges.

(iv) Many difficulties are being faced by the engineering collages users while accessing and using the various types of online resources due to lack of their knowledge about search techniques.

(v) Advancement in modern technology enriches the professional services of engineering college libraries.

(vi) Engineering college libraries do not have a proper information system for providing fast, efficient information services for fulfilling information requirements of faculty and students according to their needs.

1.9 LIMITATIONS

(i) This study covers only two divisions in Rajasthan with colleges of only two districts.

(ii) Only those engineering colleges which are affiliated to Rajasthan Technical University are considered for the study.

(iii) The response of the users is not equally distributed for various categories under the study because the strength of the students are different in such categories.

(iv) The Information Seeking Behaviour is explained in terms of user behaviour for academic and research purpose only.

1.10 RESEARCH METHODOLOGY

At present various techniques are found which are adopted for carrying out such studies. As far as the present study is concerned following methodology is followed :

Stage 1 : Identification of the stakeholders: to assess the information seeking behaviour different sources, type of work, tools and techniques used at colleges are identified by survey and visit at different institutions/libraries.

- ***Selection of the colleges*** : 12 colleges which are affiliated to the Rajasthan Technical University are selected in Kota and Udaipur division of Rajasthan. Two district in each division are covered (Kota division Kota and Bundi and in Udaipur division- Udaipur and Rajsamand districts) under the study.

- ***Sample size***: A total number of 1310 questionnaires were distributed and total 862 (65.8%) questionnaires were received from the User. A total number of 650 B. Tech final year student 330 M. Tech Student and 330 faculty members and research scholars were selected for distribution questionnaire, 379 B. Tech Students, 259 M. Tech. Student and 224 faculty members and research scholars have responded.

- ***Category of users***: On the basis of the nature of work carried out at the engineering colleges, the users are identified and categorized as:
  (i) Faculty and Research Scholars
  (ii) P.G. Students (M. Tech.)
  (iii) U.G. Students (B. Tech)

Stage 2:

- ***Review of literature:*** Several previous case studies, review articles related to information seeking behaviour of users of different categories and discipline were collected from print and e-journals. Review of literature includes literature collection through different modes of information collection on related subject and fields

- ***Questionnaire:*** The questionnaire has been constructed on the basis of the objectives of the study. For the appropriate information, two type of questionnaire have been prepared for the library user and for the librarian. The questionnaire has been designed in 4 parts as selected below :

Section A- Personal Information

Section B- About the library Services

Section C – ICT Use in Library

Section D- Opinion of User

Stage 3:

- *Pilot study:* A pilot study has been conducted among 12 engineering colleges in Kota and Udaipur Division. 2 districts are covered in each division. Based on the study the questionnaire was further modified and developed. The modified questions were asked telephonically and through email.

- *Techniques followed:* A number of possible techniques have been followed in the collection of data from the users. Some of the adopted techniques employed during the study include the following:

- *Direct approach:* This technique has extensively been used in the collection of data from librarians, faculty members, research scholars and students of different institutions of the study area. It has been done in a phased manner in different stages

- *Electronic communication:* Some of the users have also returned duly filled in questionnaire through e-mail are the same is attached to other data available with investigator.

Stage 4:

- *Compilation of data and thesis writing:* Collected data is compiled and analyzed. The statistical analysis is also performed using Arithmetic Mean, Mode, Median and Standard Deviation etc.

- *Presentation of Results:* Obtained results are presented in tabular form and graphically using bar diagram, pie chart etc.

- *Findings:* Findings are compiled according to the points in questionnaire and some points are suggested for better use of library and for further research.

1.11 EXPECTED CONTRIBUTION FROM THE STUDY

An information society is primarily a knowledge-based society and the importance of information not only lies in its provision, but in the accessibility and utilization for effective development. The need for information and the means of communicating it to enhance social interaction have been of great interest to man for several generations.

The study describes the actual needs and seeking behaviour of faculty members, post graduate and undergraduate students and library professionals of different engineering colleges of Kota and Udaipur Division. It is the primary duty of the library staff that the needs of users are to be satisfied at the earliest possible time. However most of the users cannot communicate their needs properly and clearly. It is the job of information specialist to make the user comfortable and then extract his needs by putting a series of questions.

The study will contribute towards strengthen the library services for better information seeking process for the users which affect the information seeking behaviour. Simultaneously the study will exhibit the effectiveness of sources and services of participating engineering libraries of Rajasthan. The study attempts to highlight the adequacy of the collection and services for the research needs of the engineering libraries. The study examines the effective channels through which information is accessed. The study also emphasizes on the need of user education, training of using electronic sources in the participating libraries etc.

Some important area of research questions are-

(i) What kind of information is being sought for research by users?

(ii) What methods are used for seeking information?

(iii) How is information technology used by users?

(iv) What are the problems of information seeking and how it can be solved?

(v) What criteria are used to get the information and information used by users?

(vi) How users are seeking their information from library?

Thus it is expected that this study will be helpful in giving the conceptual and behavioural change observed of information seeking behaviour of users in the present era of information technology on one hand and actual status of various libraries of engineering colleges in Kota and Udaipur regions of Rajasthan on the other.

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CHAPTER 2

REVIEW OF LITERATURE

CHAPTER

2

REVIEW OF LITERATURE

2.1 INTRODUCTION

Information is an important resource for individual growth and survival. The progress of modern societies as well as individuals depends on right kind of information, in the right form and at the right time. Information is needed to take a right decision and also to reduce uncertainty. A businessman needs information to improve his existing business just like a specialist who needs information to remain up-to-date and well informed in his area of specialization. Information seeking behaviour is important in judging the selection of right information and using it at the appropriate time and place. For any meaningful information to be provided, certain relevant information sources must be consulted. It is only through such sources that information seekers can obtain information that is ideal for a meaningful decision-making leading to increase in productivity. For the researcher and various users to elicit data on the needed information various information sources used includes books, journals, magazines, newspapers, annual reports, handbooks, etc. Behaviour and habit of users play a great role in seeking of using different sources. It also varies from discipline and profession to professor for example an IT profession will be habit of using IT based sources while a historian will focus on old historical documents. The information seeking behaviour primarily various with educational and economical back round of users' availability of resources, training for relevant search practice etc. Several research studies have been conducted so far for information seeking behaviour of different professional groups in India and elsewhere.

Various studies have been performed on assessing the information need of to analyze the information seeking behaviour of students and teaching community. Undoubtedly, the availability of electronic access to information has reported to gradually brought some major changes to human information behaviour related sources and services and their use in life. That library and information professionals shall study the information seeking behaviour, and its place within the learning process is the suggestion in the study.

2.2 PREVIOUS STUDIES

Brief review of important studies conducted in past Thirty-five years is presented to this chapter.

Krikelas (1983) examined the elements of user studies and presented them as unified concepts within a model of information-seeking behaviour. The concept of information-seeking behaviour, information needs, information gathering, information giving and source preference are discussed by him. The user Information seeking behaviour and the user Characteristics in seeking information are presented as two entities. These two entities are studied and have given emphasis on correlation of these two entities in information seeking by **Sridhar (1987)** in his study. The various aspects of information-seeking behaviour examined by Sridhar (1989) included the motives and purposes of seeking information, nature and type of information sought, delegation of information gathering work, and the time spent in gathering activity. The information seeking is not restricted with the libraries only but is also seen in the local council offices, professional people, post office, advice agencies, family and friends depending on the information they need to seek.

Marcella and Baxter (1999) reported the results of their survey of information needs and information seeking behaviour of a national sample of the UK population. The major findings include that the majority of respondents had sought information in the past and that an even greater number predicted a future need for information. The study shows the trend towards the new technology to access the information. The World Wide Web is reported as a tool for partial information gathering and learning for students.

Fidel et al. (1999) analyzed web searching behaviour of students. They pointed out that, web can be envisioned through user training on web resources and systems design which accommodates users' information seeking and searching behaviour. Searching the World Wide Web was the principal internet activity and use was generally conservative in character. The concluded that web publishing has made tremendous change in the information access process. Two main platforms used for searching the Web – directories and search engines.

Green (2000) explored the interrelation between Web publishing and information retrieval technologies. Most of the libraries were reported to have their sites to explain about library resources, products and services. The level of end user satisfaction with information technology (IT) has widely been accepted as an indicator of IT success in the research.

Mahmood and Burn (2000) focused on the relationships between end user satisfaction and some of the variables such as perceived usefulness, ease of use, user expectations, user attitude towards information systems (IS) in widely divergent settings and the user skills. All library service providers must need strategies to cope up with this diversity.

Osorio (2001) in an article 'Web Sites of Science-Engineering Libraries: An Analysis of Content and Design' showed that the home pages have many of the elements found in other academic home pages; it was also found that they have the problems and limitations typically found in similar home pages. It is not intended to be an evaluation instrument of web sites but rather a tool to create the fingerprints of typical science engineering web sites. Unlike other studies where a critical tool is developed and a scale of values is defined in order to evaluate home pages, their study does not contain evaluation criteria nor scales to measure features. In this study neither number of elements identified, nor groups of libraries defined and then compared as in **Cohen and Still (1999)**. Their study is an exploratory tour to identify predominant design features and content elements of a college library website. Sixty-six elements with at least one occurrence are identified out of which

18 elements are related to the design of home pages, 48 elements are related to the content of the web sites. It is arbitrarily decided that if an element, for example, "navigation bar" or "staff directory" is present about 30% of the time or more then this element is considered a predominant element. The model page shows the predominant elements in today's home pages of science engineering-libraries based on the sample of pages selected.

Bates (2002) in an article entitled 'Toward an Integrated Model of Information Seeking and Searching' argued that a more complete understanding of information seeking behaviour requires attention to the several levels of human existence, not only to the social or individual perspectives too. Searching thus becomes one's behaviour within a general model of human information-related behaviours. Human tendencies to use the principle of least effort, and more generally, to be quite passive in information seeking, may come about because so much needed information has come automatically from the social milieux of most people throughout the history of humanity. Writers also developed an integrated model for two purposes: i) to provide a single model that incorporates both information seeking and searching within it, and ii) to integrate the social and cultural with the underlying biological and physical anthropological layers of human experience with respect to information seeking and searching.

Kerins et al. (2004) in 'Information seeking and students study for professional careers: the cases of engineering and law students in Ireland' revealed some patterns in the information seeking behaviour between students studying to become professionals and information seeking patterns of these groups identified in the **Leckie** model. Students learned their information seeking strategies, including effective and less effective approaches, from educators. Misperceptions of the role and value of libraries and information professionals in their studies were common, and as a result, students often adopted information seeking strategies that excluded libraries and library staff. They suggested that the engineering and law students could benefit from greater information literacy training and awareness, enabling

them to acquire the information skills they need to function effectively and efficiently in their future professional work field.

Järvelin and Ingwersen (2004) suggested two action lines for research in information seeking behaviour. On one hand, information retrieval research needs to be extended to capture more contexts so that information retrieval systems to get statistically significant percentage and helped the actor to solve the search task more effectively or efficiently, on the other hand, information seeking research needs to be extended both towards task context and the information systems context.

Foster (2004) in his research paper entitled 'A Nonlinear Model of Information-Seeking Behaviour' answered the three questions: (i) what was the activities, strategies, contexts, and behaviour used and thought to be used by interdisciplinary information seekers'? (ii) What was the relationship of the core processes, contexts, and behaviour as part of interdisciplinary information behaviour? (iii) How the information-seeking behaviour of interdisciplinary researchers be represented in an empirically grounded, theoretical model of interdisciplinary information-seeking behaviour?

Foster derived a model that offered a complex multilayered tool to explain and further explore interdisciplinary information behaviour. A possible foundation for the exploration of general information-seeking behaviour is suggested. It offered a new, nonlinear model of information-seeking behaviour, which contrasts with earlier models of information-seeking behaviour.

Aina (2004), opined that "the information seeking behaviour of a user depends on education, access to library and the length of a time user wishes to devote to information seeking". No matter how comprehensive the resources. and services of a library are. **Savolainen (2005)** has identified the spatial factors as contextual qualifiers of information seeking. Three major viewpoints were identified with regard to the degree of objectivity of spatial factors. The objectifying approach conceives of spatial factors as external and entity-like qualifiers that primarily constrain information seeking. The realistic-pragmatic approach emphasized upon

the ways in which the information sources in different places are available such as daily work environment orients information seeking. The perspective approach was focused on how people subjectively assess the significance of various sources by means of spatial constructs such as information horizons.

Carole A. George et al (2006) in their article entitled "Scholarly Use of Information: Graduate Students' conducted a study on explored graduate students' information behaviour" related to their process of inquiry and scholarly activities. They found that Libraries can influence students' information behaviour by re-evaluating their instructional programmes and provision of resources and services. Library persons can take a lead by working with academic staff to guide students.

Singh and Satija (2006) in their review study, which covers significant studies on information seeking behaviour of agricultural scientist conducted all over the world. The study is aimed to clearly delineate the research plan, in conducting research on information seeking behaviour of agricultural scientist in Indian environment. Similarly, this also determines the degree of information needs and information seeking behaviour of agricultural scientists working abroad. The study can be a base for future research in the agriculture sector on information seeking behaviour in designing and developing the need based agriculture information systems/centers for meeting the information requirement of agriculture scientists.

Ramesh Babu et al. (2007) in 'ICT Skills among Librarians in Engineering Educational Institutions in Tamil Nadu' showed that the library and information professionals working in engineering educational institutions in Tamil Nadu in one way or the other are acquiring considerable basic skills in ICT. But they need to concentrate more on network-based services and digital library services. In order to enhance the ICT skills among library professionals they suggested that librarians must be encouraged for upgrading ICT skills by the respective managements. Library schools must change their curricula focusing on ICT such as digitization for digital libraries, etc. Library and information professionals globally are being affected by the pace of ICT developments o as their roles keeps on changing.

According to study ICT offers a number of new opportunities to library and informational professional. Librarians with appropriate ICT skills and technological expertise that focuses on the needs of the users/organizations are reported to have ample opportunities of development in future. Most of the opportunities are reported to be available outside the traditional settings. Some suggested roles were website coordinators, webmasters, database consultants, metadata specialists, digital literacy managers, information literacy coach, corporate information officers, knowledge managers, etc.

Tahir et al. (2008) in an article entitled 'Information Needs and Information-Seeking Behaviour of Arts and Humanities Teachers: A Survey of the University of Punjab, Lahore, Pakistan' studied that consulting with experts in the subject field was the preferred method of getting information followed by the conversation with colleagues. Reference books were the most important resource for teaching. Humanities scholars' information needs are diverse and they rely heavily on books and older material, so the lack of availability of required material in libraries is a major problem in information seeking. They suggested the information professionals shall analyze the findings of the study and design, develop, and introduce new library and information services for humanists.

Sookhtanlo et al. (2009) in 'Library Information-Seeking Behaviour among Undergraduate Students of Agricultural Extension and Education in Iran' revealed that awareness of library scientific resources and availability of library resources items were the most important and influenced factors in library information-seeking behaviour of the students. Users with higher academic level are generally expected to have higher skills through information-seeking behaviour. On the contrary, their study indicates that the students were not influenced by this. Gaps in the library facilities in different universities have direct influence on students' library information-seeking behaviour. Besides, interactions searching by asking with other students and faculty were the other means that students' used for seeking information. In the study a research model for students' library information-seeking behaviour was also proposed.

Rafiq and Ameen (2009) suggested that future libraries must be more user-centered rather than system-centered. Research in information-seeking behaviour and user satisfaction enables the library to evaluate and realign resources and services according to users' requirements. The survey results may be helpful to the librarians making important management decisions about collections, services, information formats, use of resources, web search engines and email servers, and the library's physical environment.

Nycyk (2010) in the article entitled 'Hindrances as Learning Tools When Seeking Information: Sense-Making Methodology and System Improvement' discussed the concept of the hindrance based on Dervin's (1983) Sense-Making methodology. Dervin's methodology was used to illustrate that how hindrances can inform designers of ways of improving systems or learning from mistakes in creating new systems. What stops the information seeker from going forward must be considered and noted for future improvement of a system.

Idrees and Rehman (2010) in a paper entitled 'Internet Use Behaviour of the Library Information System (LIS) Community in Pakistan' showed that there was a rapid growth in information and communication technology (ICT) infrastructure and use in Pakistan. All the segments of LIS community of Pakistan were abreast with the ICTs. A reasonable amount of LIS community is connected with the world through Internet. It is evident by the current development and growth in ICTs that the rest of the community will also be connected with this technology soon. They opened that even people are aware of the importance and effectiveness of internet and online resources, still there is a need for the training and development of the human resource to enhance the skills.

Okello-Obura and Ikoja-Odongo, **(2010)** studied the advancement of technologies which have made possible the extrapolation of knowledge and converted academic libraries from a traditional environment to a digital environment. A superior stage of development has been reached where the prevalence of the electronic formats allows for providing enormous of information

to a tremendous number of users. To meet the ever-increasing demands from users for remote access to information, academic libraries are reported to subscribe to electronic resources such as e-books, full-text e-journals and online bibliographic databases. The innovative delivery services integral to accomplishing the goal of maximum information accessibility have proven to be quite successful in reaching out to the diverse library users' targets and addressing their specific needs for information services in the study area. The libraries of the future are reported to become more of a portal through which students and staff will access the vast information resources of the world and less of a place where information is kept. According to author the need to use electronic resources is of paramount importance in developing countries if access to up-to-date e-resources is to be realized. Computer skills of Library Science postgraduate students should be improved. Library staffs were to promote electronic resources by providing references for students to locate; this may increase the number of students acquiring the necessary information retrieval skills. Skills of librarians on e-resources searching and retrieval were also reported to have need of improvement.

Singh and Moirangthem (2010) in their research article entitled 'Are Indian Libraries VIP-Friendly? Information Use and Information Seeking Behaviour of Visually Impaired People in Delhi Libraries' reported that for a visually impaired person, library service is a critical channel and often the only source of reading material. While a sighted person has not only the public library but the local book store, newsstands and book clubs to supply with reading materials, a blind person cannot expect to get recorded or brailed literature from these sources. Thus library plays a great role in fulfilling the information and educational needs of the visually impaired people. So efforts need to be done for improving the library and information services. Attention has been drawn to the still very insufficient library services available so that steps can be taken up to improve and develop new services to fill up the lacunae in providing information services to the visually impaired people. Today serious efforts need to be done by the libraries/institutions/NGOs for these neglected groups of special people in fulfilling their information needs. They

suggested that more and more studies on this area should be undertaken by the Library professionals so that libraries could develop need-based collections/services to this category of physically and challenged users.

Mulla et al. (2010) in 'Usage and Performance of Various Library Software Modules in Engineering Colleges of Karnataka' observed that libraries lack computer facilities. It was observed that serial control and acquisition modules are being used by fewer librarians because acquisition process was different from software to software and from library to library. Most of the libraries are having good IT infrastructure and other accessories. To be the part and parcel of library information system development process, library staff should respond to the developments in technology; they must keep up to- date with technologies available, they must evaluate technologies, so that they can make informed decisions about using the technologies, and are able to develop practical plans for implementing the technologies. Up-gradation of the core competencies of staff, alongside library's automation system are suggested to enhances the professional competencies of the staff. They also reported that the impact of library automation on services of responded libraries has increased in terms of ILL, users visit to library, circulation, and will be helpful in building the appropriate collection in future.

Raza et al. (2010) conducted study at Central Drug and Research Institute (CDRI), Lucknow for Information Seeking Behaviour of Researchers. It was found that most of the researchers visit the library weekly, generally to collect reading material. The OPAC is the most-used resource for searching, and most researchers prefer to search by subject. Literature searches are performed using the library's international network. Most of the use of Internet services is for email and users faces the problem of slow downloading. Photocopying and the OPAC are the most-used services in the library of CDRI. Newspapers and bibliography are the most popular in the library. A significant number of researchers use the library's e-journals, and most attend conferences, seminars, and workshops frequently. Most of the researchers feel that library staff is helpful and find the library facilities satisfactory. They concluded that most of the users are satisfied with the services

provided by the library and the study reveals that there is a good application of Information Communication Technology (ICT) in the library. Information seeking behaviour differs from one discipline to another and from one institution or library to another. Library information systems is reported to have capability of handling the complex information need and demands of researchers.

Nishat Fatima et al. (2011) focused on the undergraduate and postgraduate students the faculty members and research scholars at various departments of the Aligarh Muslim University. The investigator observed that the library portal has become one of the most commonly used media for effective and efficient delivery of information as it not only offers information about policies, staff, opening hours, library members and services available in the library, but also conveniently deliver electronic resources such as electronic books, electronic journals, online databases, online dictionary, encyclopedia, bibliography, electronic directory, biography directly to the users on their computer screens. The investigator found that about 65% student frequently use their own library portal and about 92% student used others institutions library portal as well but not frequently. The study found that the reason for not using the library portal was mainly the lack of awareness and lack of training and guidance to the student. They suggested, it is the need of hour that more and more information literacy programmes should be conducted by the libraries to enable the effective use of library portal.

Lakshmi Sankari et al. (2011) examined that the core of the library profession remains the same but methods and tools for information delivery continue to grow and change dramatically. Libraries must understand information-seeking behaviour of users to re-engineer their services and provide information efficiently. The results of this study revealed that the users are satisfied with library collections and services of the college library, but users want training in the use of online information. Although document delivery service is being provided on demand, the researchers pointed out that it would be worthwhile if the library could provide them with indexing, abstracting and interlibrary loan service as well. User education about library use must and should be carried out as a seminar or workshop training.

Kadli and Kumbar (2011) conduct a study on faculty of commerce college Mumbai. The study is based on information seeking behaviour in the changing ICT environment.

The study finds out that most of the user spend their time in searching online databases (86%) and access online journals (89%). The study also revealed that the users sometimes face problems such as 'needed information is not available in library', 'incomplete information in sources', 'do not know how to use online catalogue', 'do not know how to use electronic resources', 'lack of information skills to search', 'internet speed is slow'. These problems indicate that users don't know how to use the online resources effectively. They need information search skills. It is also indicated that libraries should develop the state of the art infrastructure in all respects or they should upgrade existing ICT infrastructure. Changing ICT environment has affected the information-seeking behaviour majority of the users.

Prabhavathi (2011) in her article 'Information Seeking Behaviour of Post Graduate Students of SPMVV, Tirupati (AP): A Study' felt that there is a need for better orientation about library resources and services and user-training workshops especially in using and searching skills for journals, abstracting sources (abstracting databases) and internet to support learning, teaching and research. A new pedagogical culture, which is supported by technology, has to be carefully designed and put to use for developing students' information skills. In addition, it is important that new pedagogical models, which emphasize higher order information seeking activities did not become an unmanageable additional cognitive load

Onuoha and Awoniyi (2011) was of the opinion that Librarians and library staff should make more effort to reach out to students; this would not only draw the students closer to them, but also encourage students to ask for their help while seeking for information. It was also suggested that university libraries should embark on use of library training skill for students to ensure that they have the required knowledge that would enable them to make maximum use of library resources.

Khan and Shafique (2011) in their research work entitled 'Information Needs and Information-Seeking Behaviour: A Survey of College Faculty at Bahawalpur, Pakistan' stated that an information centre should be given functional freedom to great extent for improving its services. It was found in their study that college faculty use books/monographs and face-to-face discussion with their colleagues and friends instead of college librarians. Keeping this fact in view, college librarians should enhance their communication and interpersonal skill to provide better services.

Dhanavandan (2012) in a study entitled 'Library Automation Software in Self Financing Engineering College Libraries: A Study', showed that 95 per cent of the colleges use the library automation software in their libraries. In the case of different commercial library software, the Autolib takes the first position and Libasoft the second and in house prepared software are at the third position in the utilization of the library automation software. But in the case of status of minority wise analysis, the religious minority and linguistic minority institution libraries are fully equipped with library application software.

Igwe (2012) described information seeking behaviour as an individual way and manner of gathering and sourcing of information for personal use, knowledge updating and development.

Natarajan (2012) described about electronic resources (e-resources) and their different types. The information seeking behaviour of students, researchers and faculty members in the e-environment is discussed. The results of the study showed that 92.3 % of respondents seek to keep abreast with current developments, followed by 91.3% to develop competence, 81.2% to improve general knowledge. It was found that majority of the students used the library daily and the resources were utilized effectively. Internet was used as the major source of information. The respondents were found satisfied with the library facilities and services in different organizations. The study also concludes that e-resources are helpful for anytime availability and easy to access the resources, which helped researchers in timely completion of work.

Chaurasia and Chaurasia (2012) in their study entitled "Exploring the Information Seeking Behaviour of Students and Scholars in Electronic Environment: A Case Study" have focused on the information seeking behaviour of research scholars and P.G. students of Indian Institute of Technology Delhi. In the survey the respondents said that they require training for learning more about the E-resources in order to wide access and make use of these e-resources. To overcome the hindrances in accessing the e-resources, they recommend awareness programmes for the students and to provide training one resource and retrieval skills. The suggestion given by the research scholars and P.G. students must also be taken into considerations during extensions of libraries

Natarajan (2013) in an article on information seeking behaviour of students of Management Institutions in National Capital Region (NCR) of Delhi, suggested that the libraries should enable high level internet connectivity for providing access to quality e-resources within and outside the libraries. Reprographic services must be provided for users in order to photocopy necessary materials not allowed outside libraries. He also reported the other most used services included Online Public Access Catalogue (OPAC), book borrowing and Selective Dissemination of Information (SDI). It was also discovered that most of the students were not aware of the available resources and the means of using information retrieval tools. He suggested that resources should be properly organised and guided by way of establishing latest arrival racks at different places in the library, proper advertisement of resources etc. It was also suggested that library professionals ought to train the students within the e-environment as per the changing needs and should guide them in using varied information retrieval tools with efficiency.

Pareek and Rana (2013) in their research entitled 'Study of Information Seeking Behaviour and Library Use Pattern of Researchers in the Banasthali University' suggested that there is a need of advance training for researchers to use the library system. They emphasized that the use of library sources should be included in research curriculum and in the orientation programmes or periodically training programmes shall be organized for library staff. It is also suggested that in

library handling of technology, computers, network should be developed and access of e-resources should be available at hostels through local network. They feel the need to concentrate on proper book shelving and preservation and inter library loan through document delivery services. it is also suggested by them that there must be a library website separate from the college website.

Doraswamy (2013) identified the role of the libraries in the information needs of the students. Mostly the students use the libraries for their academic purposes (specially for examinations) but some of the students also want to know the depth of the subject and few students wish to use the libraries for research purpose. From this analysis they concluded that the students of the engineering college has different requirements to meet their needs like they need low standard text books for their examinations purpose, medium standard text books for their subject improvement purpose and high standard text books for their research purposes.

The findings of **Sharma and Sharma (2013)** indicated that people, specially academic staff, play a central role in information seeking behaviour of users in Schools of Management and Business Studies in National Capital Territory (NCT) of Delhi. Postgraduate students, research scholars and faculty rely heavily on the internet as well as on the online resources available in university libraries for information, along with hard copy materials such as books, journals and papers. A few postgraduate students, research scholars and faculty mentioned influences such as difficulty in locating information or the need for convenience and speed. Their study provides an overview of the complete study and findings as well as a comparison of the similarities and differences among various universities.

Mostofa (2013) in a paper entitled 'A Study of Information Needs and Seeking Behaviour of Faculty Members of Darul Ihsan University in Bangladesh.' examined the acquaintance of the faculty members with the information seeking process. The findings showed that main information needs of faculty members are related to their teaching and research purposes. The telephone and email are the

main channels for obtaining the latest information. However, the faculty members use the library infrequently as their place of study. The problems identified by faculty members that they cannot locate the targeted sources as information remain scattered in too many sources. The knowledge of the faculty members for their own information needs and the searching process was found to be sufficient to meet their actual needs. They gave suggestions to fix the gap in information need and information seeking behaviour. They suggested that the faculty members of each department can cooperatively work with each other; whereas librarians should provide specific information seeking skill instruction for each department related to their careers and professional activities.

Umesha and Chandrashekara (2013) explored that seeking and searching behaviour is driven by internet search engines like Google, very few are able to differentiate between scholarly database and internet search engine. The information availability at free of cost, though not authentic sources (like peer reviewed information) using the internet search engines are drawing more attention, not just because it is simple, it is more because each searcher gets some information (whether authentic or otherwise). They find that majority of the studies also have revealed that users have shifted from scholarly information to free un-authenticated content (driven by internet search engine). It is also observed in many studies that latest searching behaviour are influenced by e-commerce searching and shopping behaviour. At the same time, many users are influenced by peer group of the age, not by information literacy program from the libraries. The competition among the publishers, visibility competition, more Google visibility etc., is driving the users and this behaviour continues strengthening of course, many discovery tools are now making scholarly search, much better than Google to increase users' loyalty like in traditional libraries. In this information ecosystem, dentists are passionate about solving problems in a professional manner, which requires the detailed study about most suitable and balanced way to seek information.

Lewis and Mallaiah (2014) studied a comparative study in engineering collages of Dakshina Kannada and Udupi Districts about the use of information

resources. The study cleared that a greater part of the respondents prefers friends/colleagues and the internet as their main channel of information seeking. It is also found that text books are the most important information resources among the respondents, followed by newspapers and magazines and online journals. The least important information resources are CD/DVD ROMS, conference/seminar proceedings and project reports. The respondents do experience inadequacy of information resources in the existing engineering college library collection. Lack of time and limited access to computers with IT infrastructure were the main problems for seeking information. The study indicated that information seeking may be motivated by a wide variety of needs including, personal and professional needs. The successful operation of a library depended to a large extent on the type of library collection. They suggested that collection in library should meet the needs and requirements of the users, librarians must be aware of how students seek information. Knowledge of user information needs and information-seeking behaviour is imperative to develop a valuable collection, and to improve the facilities and services.

Kadam (2014) studied 'Engineering College Libraries in Maharashtra State with Special Reference in Library Automation. Results of the study showed that there is partial automation in libraries and most of them use SLIM software and homemade or local made library management software. It is recommended that the standard software having internationally recommended standards for data exchange should be used in the library automation process. But as the results of the study showed that many of the engineering colleges were using local made or homemade software for the purpose of library automation, hence there is a need of awareness among the engineering college librarians regarding selection criteria for the Integrated Library Management Software.

Sahu et al. (2014) have studied the Information Needs of Library Users of Selective Metallurgical Institutions in Jharkhand; tool for understanding the issues in metallurgical Library and Information Centres (LICs) related with users and their required document management. Several important points relating to the access, use

and preference in publication, archival of rare document, access habits in information seeking, etc., with respect to six metallurgical organizations under study revealed adoption of a need-based strategy with respect to the users of the type of organizations. They found that the government-funded LICs have a provision of better facilities and professionals and function more of a participating user like any organisational beneficiaries whereas in public-funded organisation the library personnel serve them as technical service provider only. In private it is getting more deteriorating as the fund flow is immediate need-based, and person-based and thus sporadic.

Naqvi (2014) conducted a study in Govind Ballabh Pant University of Agriculture and Technology (GBPUAT) for library collection and services to postgraduate students and research scholars. The study revealed that the library collection, such as books/monographs, reference materials, research reports/bulletins, CD-ROMs, newsletters, periodicals, thesis/dissertations, book reviews and seminars/conference proceedings/workshops are the most used sources of information among the P.G. students and research scholars to satisfy their different purposes. Moreover, the library services as photocopy, CD-ROM database, online, catalogue, indexing and abstracting, CAS, bibliographical, reference, and lending/circulation are most frequently used services by the students. It was observed that CD-ROM databases, e-journals, and online databases were most used e-resources among the students. Electronic and online databases such as A*GRIS,* AGRICOLA, CAB Abstract and Agriculture and Natural Resources were the most used databases among the P.G. students and research scholars. It was also observed by them that the collection and services in e-format have become the most used medium and an important part of the agricultural university library in fulfilling the demands of the user community for required information. In this regard, the library is playing an important role in transferring the scientific and technological information to the users by stocking a good amount of print and e-collection in agriculture and other related subjects.

Sudha Rani (2014) conduct a study to examine the information seeking behaviour of Undergraduate Engineering Students of Acharaya Nagarjuna College of Engineering and Technology, Guntur. The major findings of the study are majority of the respondents preferred to use both print and electronic information and 51.36 % of the respondents opined that the use internet for seeking information to their academic needs affect the visit to library. The study concluded that users were satisfied with the working hours of their library, arrangement of books and periodicals. Internet plays a significant role on engineering student's information seeking behaviour and visit to the library

Moly (2014) in their article entitled 'Information Need and Information Seeking Behaviour of Information Science Students in Haramaya University, Ethiopia' explained that more than half of the students visit the library every day whose main purpose of visiting library was for writing assignments/research and study. Students mainly use reference services from the library and for which they depend on reference sources. Majority of students feel that there is a need for training for the efficient access and use of library materials. Information science students also mentioned that the number of books and journals available in their field of study are not sufficient. According to the students the university library should acquire more resources as well as the library should provide sufficient space for students to refer and study within the library.

Upadhyay and Dang (2014) defined in a study entitled" Information Needs and Information Seeking Behaviour of Students of Administration Institutions in National Capital Region of Delhi "Information seeking behaviour is an essential component in the designing and developing of need base. The study shows that majority of students 49.7% are not aware of the existing resources in the library, followed by 40.6% not aware of using the information retrieval tools, 36% informed that the documents are old, 34% said that the materials are not available as per their requirements, 30.4% informed that sources are scattered and so on. The study also discovered that most of the students are not aware of the available resources and the means of using information retrieval tools. Study suggested that resources should be

properly organised and guided by way of establishing latest arrival racks at different places in the library with proper advertisement of resources etc. It is also suggested that library professionals ought to train the students within the e-environment as per the changing needs and should guide them in using varied information retrieval tools with efficiency.

A study undertaken by **Selvaraj and Rathinasabapathy (2014)** documented the electronic information use pattern of faculty members and students of 16 self-financing engineering colleges in Tiruvallur District of Tamil Nadu State. The study revealed that 102 (25.76%) faculty members visited the library daily while 178 members (44.95%) visited weekly thrice. 108 faculty members (27.27%) visited the library for the purpose of borrowing books, followed by 84 (21.21%) visited library for reference. The findings of the study would put light on the important data and insight into the current state of practices of faculty members and their understanding about information use pattern.

Kadli and Hanchinal (2015) in their article entitled "Information Seeking Behaviour of Law Students in the Changing Digital Environment" revealed that the law students use IT-based library sources and facilities more frequently along with printed sources. Similarly, it is also noted that e-mail is the most popular internet application used by the students, whereas other internet-based services and applications are used moderately. This is a matter of concern, as presently, electronic information sources and the internet are considered extremely important tools for effective teaching, learning and research. Therefore, the college libraries need to review their policy on electronic information resources. They suggested that generally, students depend upon a various information sources to complete assignments, project work, journal writing and preparations for the exams. The students of the colleges 'often' face the problem of the 'information overload on internet' and 'Lack of information skills to search'. Therefore, library staff should be trained to render quality services and train users to find the needed information on their own. To improve the services and facilities of the library it was recommended that the libraries shall adopt the practice of taking feedback from the users by

circulating an online questionnaire which will certainly help strengthen the library resources and services. Finally, it was suggested that the law librarians need to work in collaboration with the teaching faculty to influence students' information seeking behaviour by re-evaluating the collection development policy, instructional programmes, services and facilities based on the needs of the current users.

Veena and Mallaia's (2015) study was to examine the information seeking behaviour of management students (MBA) and teaching staff in Sahyadri Engineering and Management College Library, Adyar, Mangalore. The results of the study highlighted that guidance required in the effective use of library collections and services was necessary to help the students to fulfill their information needs and requirements, It is suggested that the library should organize various user awareness programme /orientation and training programs for optimum use of available print and electronic resources and improve the information searching skills. Library should facilitate internet connection speed for instant and bulky data at a time. Furthermore, college library as increasing the number of infrastructures i.e. computers, internet connection and other requirements related to access of e-resources. They advised university should provide more budgets for subscription of full text electronic resources for users' requirements. As highlighted from this study, main information required by management students and staff is academic information to facilitate them to prepare their notes, assignments, articles, seminars, undertaking research projects. The results of this study indicated that the respondents were satisfied with the library resources and services provided by the college library.

Abraham el al. (2015) in their manuscript 'Information needs and seeking behaviour of engineering college faculty of Tiruchirappalli district' suggested that the user studies have to be conducted periodically by the library professionals to know the expectations of the users. The latest technologies are to be updated based on the findings of the survey. The library professionals can post a proposal for managing authorities to establish ICT facilities in the libraries. The faculty expectations from the library are to be conveyed through user studies. This was a

sample study among the Engineering Faculty. They realized that existing resources shall be disclosed to the users for proper utilizations. Such types of surveys may help the library professionals in providing better sources and services to the user community.

Nadir (2015) explored the information-seeking behaviour of the undergraduate students at the School of Computing at University Utara Malaysia within the context of searching information for university tasks. He reported the problem encountered by students when during search for academic information some of the required books are not available at the library. The study revealed that majority of undergraduate students preferred to use Google (97.6%) as the main search engine when searching for academic information to complete their assignments. Students preferred to search academic information by surfing the Web because the Web is accessible 24/7 and it usually provides up-to-date information. In this study, information-seeking behaviour comprises identifying information needs and searching the required information using selected methods in order to fulfill the needs.

Kumar (2015) suggested that the organisation of information/knowledge is an essential preliminary to its effective exploitation and dissemination. As the quantity of knowledge expands, the need to organize it becomes more pressing. A vast number of different means of organizing information devised and exploited since the earliest times. With the vast output of new information and ever-increasing degree of specialization in all areas of human knowledge, heavy demands are being placed on library information storage and retrieval systems, which can be scarcely met by the improvements and changes in computing and telecommunications and the integration of the two fields have had a huge role to play in the methods of information processing and dissemination in academic libraries; thus improving the quality of use to which such libraries are put.

Kumar and Chandrashekara (2015) conducted a study on "Information seeking behaviour of library users at government first grade college, Kushal Nagar

Karnataka'' The purpose of this study was to identify the information conduit used by the first grade college library users, information sources preferred by them, process adopted for getting the needed information and their library use pattern. The study found that 75% of the respondents' access information in the college library and 53.13% of them prefer print format as their preferred format of information. The study also found that 37.50% of the respondents opined that the major problem faced by them is the inadequate library infrastructure and other constraints such as low internet speed, power failure, lack of time and lack of awareness of information sources. The study revealed that the respondents used Information Communication Technology based library resources and facilities less frequently compared with printed sources. It was found that respondents used an assortment of information sources for library. It is interesting to note that, although respondents perceived the college library as effective in meeting their information needs, they prefer to first consult their personal collections. It might be due to easy and convenient access to the personal collection and/or unawareness about library collections, services and facilities.

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CHAPTER 3

TECHNICAL EDUCATION IN INDIA AND INSTITUTES UNDER STUDY

CHAPTER

3

TECHNICAL EDUCATION IN INDIA AND INSTITUTES UNDER STUDY

3.1 TECHNICAL EDUCATION IN INDIA

The growth and development of technical education in India is seen from the ancient times. Up to the Vedic period the utility of traditional and vocational technical skills such as carpentry, smithy, foundry, and weaving were part of technical education. Later during medieval India, the vocational skill reached great heights as it is evident from the findings of the archaeological remains of the period.

However, the modern cult of technical education began in India with the establishment of "Survey School" at Madras by the English traders in 1794. Besides assisting the British surveyors, the School provided training to Indian personal in modern land survey. Later on, technical education was spread to other parts of the country and was transferred from one generation to next generation. Today the technical knowledge and skill of India is speeded all over the globe.

Thus, a new system of learning process was born by combining academic education with skill training specially designed for supply of trained manpower for industrial and economic development through sustainable application of science and technology, is closely related to the state policy for industrial development and economic growth. In the field of education, technical education is relatively a new comer in comparison to other disciplines.

In the beginning, engineering education was confined to the two branches namely civil engineering and mechanical engineering while electrical engineering was started from 1882 only. The expansion of technical education in the 19th

century had witnessed the birth of many branches like mining, shipping, textile, printing etc. Since, then, engineering profession is constantly changing as well as developing at a rapid rate. Its growth is never ending and becoming more and more complex.

3.1.1 Development under Pre-Independence (British rule) Period in India

Foundation of technical education in India was laid almost at the same time as in Europe but its growth in India was very restrictive and slow till India became independent. So, it is worth mentioning that the British started first the technical education programmes in India with training to overseers on construction of roads, bridges, buildings, railways, canals, and docks, etc.

Table 3.1 : Development of Engineering Education

Year	College Name	Branch	New Name
1847	Thompson's Engg. College, Roorkee	Civil	Roorkee University IIT, Roorkee
1856	Calcutta College of Civil Engg., Writers building	Civil Mechanical (1931), Electrical (1939)	Bengal Engg. College
1858	Poona College of Engg.	Civil	
1858	Industrial School, Gun Carriage Factory	Civil	Guindy College of Engg.
1887	Victoria Jubilee Technical Institute, Bombay	Electrical Mechanical, Textile	
1908	College of Engg. and Technology, Jadavpur	Mechanical(1908) Chemical(1921)	
1915	Indian Institute of Science, Bangalore	Electrical	
1917	Banaras University	Mechanical, Electrical, Metallurgy.	

Source : Enhancing Teaching Effectiveness of Technical Teachers. Indian Journal of Technical Education

With this lower grade of technicians and technical supervisors were also trained to use measuring and survey equipments needed for army, navy and other technical establishment for maintenance of a colony of the British crown. The

instructors for those training schools were mostly British except the lower grade instructors like craftsman and artisans from local population. So, the growth and development of formal technical education in India has come a long way since its inception in the 19th century under British rule. It expanded multifold after India attained its Independence and it is still progressing. Table 2.1 gives milestones for development of technical education in country.

In 1842-47, for the field use of the skill developed due to industrial revolution in Europe and to inherit the skills from skilled to non-skilled and to train the technicians, many technical schools were established. In 1842 an industrial school was established at Guindy, Madras which was attached to Gun Carriage Factory. James Thomson, the lieutenant governor of North Western Province, first of all proposed the establishment of College of Civil Engineering at Roorkee to train engineering personnel at various levels for public works of the country.

In 1848-53, in 1948, the Roorkee University Act was passed and in 1949, the status of this college was further enhanced and the Roorkee Engineering College became first Technical University of India.

In 1854-59, a school for the training of overseers was established in Pune. "College of Engineering, Poona" '(1854) to train subordinate officers for carrying out public works like buildings, dams, canals, railways and bridges. It is the third oldest engineering college in Asia, after the College of Engineering, Guindy (1794) and IIT Roorkee (1847). In 1856, a college called the Calcutta College of Civil Engineering was also opened at the Writers' building. Its name was changed to Bengal Engineering College in 1857.

In 1860-65 no significant development was seen in this period as India was suffering the curse of the 1857 mutiny.

In 1866-71, College of Engineering, Poona got affiliated to the Bombay University. The educational work in these colleges of Guigy (Now Guindy), Sibpur and Poona licentiated courses in Civil Engineering in 1880. After 1880, the demand

for mechanical and electrical engineers was also felt, but they started only apprenticeship classes in these subjects

In 1872-77 and in **1878-83** no significant development is observed.

In 1884-89 through private initiatives, the Victoria Jubilee Technical Institute (VJTI) was established in Bombay (Now Mumbai) in 1887 to commemorate the diamond Jubilee of Queen Victoria Reign. The main objective of V.J.T.I. was to train licentiates in electrical, mechanical and textile engineering and technology. The demand for technical education started emerging from this time onwards.

In 1890-95 and 1896-1901 again no significant development in technical education is seen.

In 1902-07, realizing the importance of technical education for the development in the country, Indian Education Policy (1902) advocated a speedy growth of technical education. During this period, the government of India did not pay any attention towards technical and professional education. However, the recommendations of Indian Education Commission were accepted and technical and vocational subjects were included in the curricula of high schools in different provinces. In 1906, the first twentieth century College of Engineering and Technology was established at Jadavpur in Bengal by the National Council of Education. This college started to grant diploma courses (Polytechnic Education) in mechanical and electrical engineering in 1908 and chemical engineering in 1921 respectively.

In 1908-13 Sir Jamshed Tata established the Indian Institute of Science at Banglore in 1911. Government Resolution on Educational Policy made recommendations for inclusion of subjects of industrial importance in the curriculum in 1913.

In 1914-19, The Banaras Hindu University was established in 1916 and in1919, Pt. Madan Mohan Malviya established College of Banaras which introduced

degree classes in mechanical, electrical engineering and metallurgy. In 1917, Calcutta University Commission debated the pros and cons for introduction of degree courses in mechanical and electrical engineering

In 1920-25 Harcourt Butler Technological Institute was established in 1920.

In 1926-31 Hartog Committee (1928-29) suggested the diversion of more boys to industrial and commercial careers at the end of middle stage, for which provision was made by alternative course in that stage.

In 1932-1937, a number of such institutions were set up e.g., The Indian School of Mines, Dhanbad; The Harcourt Technological Institute, Kanpur; and The School of Chemical Technology, Bombay. Different colleges named Bengal Engineering College, Sibpur, Guindy and Poona started mechanical, electrical and metallurgy courses. By the time of outbreak of Second World War, there were approximately ten or eleven engineering colleges in India each with one annual intake of about 200 students only.

The Abbot-Wood Report:

The report of Messer's Abbot and Wood in 1936-37 recommended major reforms in the educational system by suggesting a complete hierarchy of vocational and technical institutions parallel to that of institutions imparting general education. On the basis of their recommendations, a new type of technical institutions called "Polytechnics" came into existence for training of middle level technical personnel.

In **1938-43** Delhi Polytechnic which has now been converted into an Engineering College was the first in the chain of such polytechnics established in 1941. Technical Education Committee of the Central Advisory Board of Education (1943) and the Sargent Report (1944) also recommended the development of institutions as an integral part of national system.

The Government of India realized that it was necessary for the centre to support, coordinate and promote research in technical education. Crucial decision for the technical education was reflected through the most comprehensive plans for

the organization of technical education on an All India basis. The most important was the creation of the Board of Scientific and Industrial Research in 1940 to promote industrial research. Second was the establishment of Delhi Polytechnic in 1941.

In 1944-1947 An adhoc committee, popularly known as Sarkar Committee was appointed for advising on the lines of the Massachettues Institute of Technology (MIT) in 1945. The Committee recommended that not less than four (Zone wise in North, South, East and West) higher technical institutes would be required to satisfy the post war requirements. On 30th November, 1945, the All India Council for Technical Education (AICTE) was set up by a resolution of the Government of India on the recommendation made by Central Advisory Board of Education (CABE). In March 1947, Scientific Manpower Committee was appointed to assess the country's requirements for different grades of the scientific and technical personnel during the next ten years and to recommend the measures to meet them. The Committee carried out a quantitative and qualitative assessment, according to which as many as 54,000 engineers and 20,000 technologists would be required for the period. This committee for the first time in the country introduced the concept with a capacity to predict the future requirements for manpower and to meet through an organized effort. The pre-independence era witnessed the establishment of various technical institutes that provided the base for extending it further in future. The drop back was set well with 38 institutes offering degree courses with a total admission capacity of 2,940 students and the output of graduates being 1,270 students. Number of institutions offering diploma courses were 53 with a total admission capacity of 3,670 students and the output of graduates being 1,440 students. There was a lack of post graduates studies and research in engineering despite a number of technical institutions.

3.1.2 Development in Post Independence Era

Period from 1944 to 1947 was a turning point of transition in the technical education.

In 1948-53, soon after the attainment of independence, the Government of India appointed a commission in November, 1948 under the chairmanship of Dr. S. Radhakrishnan, who suggested improvements and extensions that may be desirable to suit present or future requirements of the country. In the field of technical education, the Radhakrishnan Commission emphasized the need for new types of engineering and technical institutes in India. It advocated closer liaison between engineering and technical colleges and the Universities. It also made the significant recommendation to improve the quality and quantity of different classes of engineering and technologies in the country.

Advisory panel of Engineers and Technologists was set up to advocate suggestions for the development of technical education. The Constitution of India recognised the supreme importance of technical education for the future development of the country.

In 1954-59 one Working Group, of Planning Commission, on Technical Education and Vocational Training was appointed under the chairmanship of Prof. M.S. Thacker in 1959. The Working Group made tremendous efforts for the development of technical education in the third and subsequent Plans. It made an intensive study of the existing facilities for technical education and training in India, and made far reaching recommendations for the qualitative as well as quantitative improvement of technical education and training facilities in the country. The group recommended that the intake capacity of Engineering Colleges and Polytechnics should be gradually increased to an optimum size. The location of Engineering Colleges as well as Polytechnics should be as near industry areas as possible. The number of scholarships in the Engineering Colleges and Polytechnics should be substantially increased. In order to reduce wastage and stagnation in technical institutions, it is suggested that a liberal scheme of scholarships may be introduced and other facilities like hostel accommodation etc. may be provided on large scale.

In 1960-65, the Apprentices Act of 1961 was approved by the Central Government in consultation with Central Apprenticeship Council. Under this Act, a

voluntary scheme known as "Programme of Apprenticeship Training" was arranged by the Ministry of Education, GoI. The object of this scheme was to provide practical training facilities to unemployed engineers and diploma holders (Polytechnics) in order to furnish them for gainful employment in industry. In 1964, Education Commission popularly known as Kothari Commission was appointed under the chairmanship of Prof. D.S. Kothari. It is a landmark in the development of technical education in India. Greatest and sincere efforts were made to vocationalise and specialize the technical education at Polytechnic level. It was recommended that polytechnic institutes should be established for those students who have passed secondary school classes. Part time training or correspondence courses should be arranged for industrial training to benefit those children who are mostly engaged in domestic work.

In 1966-71, Govt. of India appointed a Committee of Members of Parliament to prepare the draft of a statement on National Policy on Education in 1967. This Committee made a significant remark that practical training should be given to technicians and they should be given a better status in Industry and in society. In 1968, the document on "National Policy on Education", which was published by the Government of India, mostly reiterated the recommendations of the Committee of Members of Parliament on Education. In 1970-71, however, there was widespread criticism of the system of Polytechnic education prevailing in the country. It was felt that the diploma courses in our polytechnics were "mostly theoretical with very little practical bias".

So, to make polytechnic education more practical, Govt. of India on the advice of AICTE, constituted a "Special Committee for Re-organisation and Development of Polytechnic Education" under the Chairmanship of Prof. G.R. Damodaran popularly known as Damodaran Committee.

This Committee looked into all aspects of technical education and suggested consolidated and quality improvement programmes of polytechnic education, autonomy of state boards, examination reforms, sandwich courses, entrepreneurship

programmes were major reforms recommended by the Committee. Like, many other reports, this too was only partly implemented because several states did not agree to follow many of the recommendations.

In 1972-77, The Apprentices Act (1961) was amended with a view to bring within its purview the training of engineering graduates and diploma holders in 1973. It continued to be implemented to train the trainees at Kanpur, Bombay, Calcutta and Madras. In 1974, a Committee named as Kelkar Committee was appointed to review the performance of Technical Teacher Training Institutes (TTTIs) and to make suggestions for their future plan and development. As a consequence, 4 TTTIs at Bhopal, Calcutta, Madras and Chandigarh were established to provide in-service training to polytechnic teachers and also engaged in educational film production, preparation of instructional packages etc. under a United Nations Development Programme (UNDP) project. In 1976-77, a scheme named "Direct Central Assistance" was started to select Engineering Colleges and Polytechnics in order to bring about qualitative improvement in the standard of technical education in the country. Under this scheme, the important projects were identified on the approval of AICTE (All India Council for Technical Education). In November 1977, Ministry of Education and Social Welfare, Government of India, established a Working Group on Technical Education. This group made an in depth study of the Technical Manpower, Research and Development, Diversification and Redesigning of the existing programmes, Quality Improvement and Industry-Institutional Collaboration in Technical Education.

From 1978-83, from 1978 onwards, development programmes were carried on by different organizations and councils in the field of polytechnic education. Role of Five year plan also highlighted in this period. In 1979, the Government of India (GOI) published a new "Draft National Policy on Education, 1979" which advocated the need for creation of a machinery for dissemination of information relating to manpower needs in the field of technical education especially in "Polytechnics".

In the last four decades since Independence, there was a phenomenal expansion of technical education in India at the Polytechnic Diploma level after the Independence of the country. In 1947, there were only 53 diploma level and 38 degree level courses in technical education and they could admit only 3,670 students each year. In the end of 1982, 11,500 trainees (3,500 Engineering graduates and 8,000 Diploma Holders) were in position.

Table 3.2 : Summary of Major Committees and Recommendations

Committee	Title	Year	Recommendations
Sarkar Committee	Higher Technical Institutions for the Post-war Industrial Development	1945	Setting up of Indian Institutes of Technology
Thacker Committee	Postgraduate Engineering Education and Research	1959-61	Funding for 100 Ph.Ds annually
Nayudamma Committee	Postgraduate Education in Engineering and Tech.	1979-80	*PG Minimum Qualifications for Industry, R & D, etc.
Nayudamma Committee	IIT Review	1986	*Greater flexibility in Academic Program *Focus on Engineering Research. *Faculty Mobility
P. Rama Rao Committee	Reshaping Postgraduate Education in Engineering and Technology	1995	*21 months M.Tech. *Increased Scholarship Amount *Assured Employment for M.Tech.
R.A. Mashelkar Committee	Strategic Road Map for Academic Excellence of Future RECs	1998	*Conversion of RECs in NITs with the status of a Deemed to be University and structural changes in governance
U.R. Rao Committee	Revitalizing the Technical Education	2003	*Regional inequity to be removed *Faculty shortage to be addressed *Need for planning and coordination in the working AICTE
P. Rama Rao Committee	IIT Review	2004	*Increase UG output of IITs *Fund Infrastructure increase *A new IITs but maintain quality

Source : Engineering Education in India : Draft Final Report, 2007, IIT Bombay

3.1.3 Growth of Engineering Education in Last Decade

Phenomenal growth of engineering education has however been witnessed in the post liberalization era which begin from1991 onwards with an upsurge of private initiative in technical education. Following tables depicts the growth of engineering education in last decade-

Table 3.3 : Growth of Engineering Institution in Country (Under Graduate)

Year	Engineering and Technology
2006-07	1511
2007-08	1668
2008-09	2388
2009-10	2972
2010-11	3222
2011-12	3286
2012-13	3369
2013-14	3384
2014-15	3389

Source: http://www.aicte-india.org/downloads/Growth_Technical_Institutions_310514.pdf

Table 3.4 : Growth of Technical Institution in Country (Post Graduate)

Year	Engineering and Technology
2006-07	979
2007-08	981
2008-09	993
2009-10	1051
2010-11	1272
2011-12	1381
2012-13	1889
2013-14	2132
2014-15	2300

Source: http://www.aicte-india.org/downloads/Growth_Technical_Institutions_310514.pdf

Table 3.5 : Growth of Intake of Technical Institution in Country (Under Graduate)

Year	Engineering and Technology
2006-07	659717
2007-08	701214
2008-09	793510
2009-10	1093380
2010-11	1219347
2011-12	1379149
2012-13	1538767
2013-14	1620958
2014-15	1693771

Source: http://www.aicte-india.org/downloads/Growth_Technical_Institutions_310514.pdf

Table 3.6 : Growth of Intake of Technical Institution in Country (Post Graduate)

Year	Engineering and Technology
2006-07	23100
2007-08	23147
2008-09	23431
2009-10	24799
2010-11	30014
2011-12	32585
2012-13	50585
2013-14	178746
2014-15	212070

Source: http://www.aicte-india.org/downloads/Growth_Technical_Institutions_310514.pdf

3.2 HISTORY OF TECHNICAL EDUCATION IN RAJASTHAN

3.2.1 Historical Background

Before, independence, Technical Education in Rajasthan was in a rudimentary stage. It was during II World war, that an ITI was set at Ajmer in 1942 and another at Jaipur in 1943 to prepare Craftsmen for the requirements of Defense Department as also to train demobilized personnel for their rehabilitation. The commencement of Technical Education in the actual sense took place in the state with the starting of Birla College of Engineering at Pilani in the year 1946. The College ran degree courses in Electrical and Mechanical Engineering. In the year 1951, M.B.M. Engineering College, Jodhpur was started as a Government institution with the help of a donation of Rs. 6.00 lacs from the Bangar family of Deedwana. The College conducted a 3 Year degree course in Civil Engineering and a two year Diploma course in Civil Engineering, Both these Engineering College were affiliated to University of Rajasthan, for their degree courses. However, the diploma in Civil Engineering was awarded by the state Government. In pursuance of the recommendation of AICTE the state Government in August, 1956 set up the Directorate of Technical Education with the headquarters at Jodhpur to plan, organize and execute the programmes of Technical Education at diploma level and work as a link between the Engineering College and the state Government. With the formation of Directorate of Technical Education, the growth of Technical Education at Diploma level and Technical Training at Craftsmen level picked up during first seven Five Year Plans. During the period –

(i) Degree colleges raised from 1 to 6

(ii) Polytechnics raised from 0 to 20, out of which 16 are Government Polytechnics (4 for girls only) and remaining 4 are private ones.

(iii) Food Craft Institutes raised from 0 to 2

(iv) The number of ITIs raised from 2 to 169, out of which 66 are Government institutes (38 for boys, 5 for girls, 13 for under TADA scheme and 10 under MADA scheme).

The Directorate as per the policy of Government is fully responsible for educational, financial and administrative management of all the Government Polytechnics and Non Government institutions under the Directorate under the specific guideline laid down by the State Government. Along with this function the Directorate is also responsible for the administration, execution and monitoring of certain special schemes sponsored by Government of India.

3.2.2 The Present Status

The State of Rajasthan has a network of higher education institutions spread over its 32 districts. Currently there are 14 universities (1 Central, 1 AIIMS,9State, Three Agricultural, One Technical, One Medical, One Sanskrit, One Ayurveda, One Law, one Journalism and One Open University) and eight Deemed Universities (Four general and Four technical), 42 private, one IIT, One IIM, One NIT catering to the educational needs of the state by imparting higher education under different categories. At present, in the tertiary technical education sector there are 48 engineering institutes including BITS, Pilani, MNIT, Jaipur, Modi Institute of Technology, Laxmangarh and LNMIIT, 16 MCA Colleges, 51 Nursing and Pharmacy institutes, three HMCT Institutes, 55 Management colleges (RTU, Kota) and around 260 Teacher Training and Physical Education colleges. Prior to the year 2006, all Medical, Pharmacy and Engineering colleges, except BITS Pilani, MNIT, Jaipur, MIT, Laxmangarh, College of Technology and Agriculture Engineering, Udaipur and MBM Engineering College, Jodhpur were affiliated to University of Rajasthan, Jaipur. Before 2006 the affiliation of all Medical and Pharmacy colleges has been transferred to Medical University, Jaipur and that of the colleges of Engineering and Technology to Rajasthan Technical University, Kota.

3.3 INSTITUTES UNDER STUDY

Map 3.1 : A Map of Institutes Under Study

3.3.1 Rajasthan Technical University

Rajasthan Technical University (RTU) is located in Kota in the state of Rajasthan. It was established in 2006 by the Government of Rajasthan to enhance the technical education in the state.

The university has been established in the campus of **University College of Engineering, Kota** (previously known as Engineering College, Kota which was established in 1981), which is located on the Rawatbhata Road, about 14 kms from Kota Railway Station and 10 kms from Kota Bus Stand. The university has good infrastructure that includes the infrastructure and facilities of University College of Engineering. University currently affiliates about 190 Institutes offering courses in various specializations which include 128 Engineering Colleges in first shift, 35 colleges in second shift, 4 institutes offering B.Arch., 41 institutes offering MCA course, 95 colleges offering MBA course, 44 M.Tech colleges and 3 institutes offering Hotel management and Catering course. More than 1 lac students study in the various institutes affiliated to the University.

Courses Offered

Rajasthan Technical University offers various undergraduate degree courses namely, Bachelor of Technology (B. Tech.); Bachelor of Architecture (B.Arch.) and Bachelor of Hotel Management and Catering Technology (BHMCT).The various post graduate courses offered by University includes, Master of Technology (M. Tech.), Master of Business Administration (MBA), Master of Computer Applications (MCA). In addition the university also offers dual degree program leading to Master of Applied Management (MAM) and integrated program leading to degree of Master of Technology Management (MTM).

Courses are Offered in Following Fields :

List of Under Graduate (B.E. / B.Tech.) Courses Offered by University	
• Aeronautical Engineering	• Petrochemical Engineering
• Automobile Engineering	• Mining Engineering
• Bio- Medical Engineering	• Textile Technology
• Bio-Technology	• Production and Industrial Engineering
• Civil Engineering	• Mechanical Engineering
• Chemical Engineering	• Computer Science Engineering
• Chemical Engineering	• Electronics & Communication Engineering
• Ceramic Engineering	• Electrical Engineering
• Food Technology	• Electrical and Electronics Engineering
• Industrial Engineering	Electronics Instrumentation and Control Engineering
• Petroleum Engineering	• Information Technology
• Textile Chemistry	• Bachelor of Architecture (B.Arch.)
• Textile Engineering	• Bachelor of Hotel Management and Catering Technology
• Applied Electronics & Instrumentation Engineering	

Master of Technology (M. Tech.)	
• Control and Instrumentation	• Nano-Technology
• Computer Science Engineering	• Information Technology
• Digital communications	• Production Engineering
• Environmental Engineering	• Renewable Energy Technology
• Geo-Technology Engineering	• Power Systems
• Industrial Management and Engineering	• Software Engineering
• Machine Design	• Structural Engineering
• Thermal Engineering	• Textile Technology
• Transportation Engineering	• VLSI Design
• Power Electronics and Electric Drives	

Master of Technology-Architecture	:	M. Tech. Urban Design
Master of Computer Applications	:	MCA
Dual degree program	:	Master of Applied Management (MAM)
Integrated Program	:	Master of Technology Management (MTM)

Picture 1 : Rajasthan Technical University, Kota

Picture 2 : University Central Library (RTU, Kota)

Central Library

Library (General): It works on an open access system from 8 AM to 8 PM. The Central Library possesses around 1, 00,043 books and more than 7600 e-journals covering the disciplines of all departments. The library is subscribing approximately 85 Indian and more than 100 foreign periodicals. The library is having one technical and 2 other staff to provide the necessary services which seem very insufficient so the workload on the staff is increased and technical work is not

complete in time. The books are classified with DDC classification. The library comprises of the Requisition, Reference, Technical, Circulation, Periodical, Periodical, Documentation, E-library, Information Material Lab, Reading room, News paper section, Child corner sections. The library also maintains the Computerized Catalogue and Display list with OPEC. It has separate building with reading room facility.

Library services: The Central Library fulfills all the requirements as per the AICTE rules. The library provides the reference services to the readers and it has photocopy, microfilm, indexing, abstracting and CAS facilities for the users. It organizes the educational programmes /seminar/ workshop etc. twice in a year for better use of e-resources but could not organize these events for library professionals for better services. Upto 15 books for teaching and upto 4 books for non-teaching staff can be issued for unlimited time but the UG, PG students including the research scholars can get upto 4 books for 15 days only. There is book bank facility for the students. *Advance Technology in Library:* Library is fully automated and uses the Software for University Library (SOUL). The library also provides the internet, e-books, e-journals, CD/DVD, Inter Library Loan (ILL), OPEC and DELNET facilities to the users and it is a member of Library Network like DELNET, INDEST and INFLIBNET. There are approximately 170 computers, 370 e-books, 7600 e-journals, 3050 CD/DVD and 3 other databases. The users and library staff is satisfied with these e-resources.

Central Library is subscribing e-journals of IEL online, ASCE online, ASME online, Emereld-95, Access Engineering Library, J-Gate (JET), ASTM Digital Library and various other digital libraries for accessing e-journals. Central Library is housed in a two storied separate building which can accommodate around 150 users at a time to pursue the academic and research activities by way of reading books, accessing electronic journals and internet and computer programming. It is connected to high speed internet. Since 2015 all activities of Central Library are

computerized, including bar-coded ID cards and separate Online Public Access Catalogue (OPAC) terminal, to know the status of books at any time. Most of the users are familiar with the uses of e-resources and services. It has its own web page also.

Satisfaction from Library: It is reflected from the survey that most of the users are satisfied with library services and library collection. Language is not a barrier in seeking the information from library. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library. Digital-library is required with more number of computers and technical staff. The suggestion box is also placed in the library to get the suggestion from the users.

3.3.2 Modi Institute of Technology, Kota

Modi Institute of Technology was founded in the year 2001 and located near Nayagaon village which is 18 Ks from Kota Railway station and around 14 kms from the main Bus stand. The college is spread over an area of 16 acres which consists of laboratories, separate hostel for boys and girls, sports and recreational facility etc. The College has a computer center with 490 computers with 4 mbps internet bandwidth

Courses Offered :

P.G. Course (M. Tech.) : M.Tech. program of 2 years duration is running in Digital Communication in E and CE department.

U.G. Courses (B.E./B.Tech.): B. Tech. program of 4 years duration is running in the following branches

- Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- Electronics and Communication Engineering
- Information Technology
- Electrical and Electronics Engineering

Picture 3 : Modi Institute of Technology

Picture 4 : Library of Modi Institute of Technology

Library

Library (General) *:* The MIT library work on an open access system from 8 am to 2.30 pm (office hours). The library is having one technical and 1 other staff to provide the necessary services which is very insufficient. It has collection of 20,800 books, 60 Indian journal and 25 international journals. Classification of books has been done with DDC scheme. There are different sections for requisition,

circulation, periodicals, references, and photocopy. Reading room is also available for the users.

Library services: Upto 10 books for teaching and 3 books for non- teaching staff can be issued for 6 months. But the U.G. and P.G. student can borrow 2 books for 14 days. Photocopy service is provided in the library. There is book bank facility for the students.

Advanced technology in Library: MIT library is fully automated and uses the IFW-ERP software. Library has 4 computers but the college has 490 computers with 4 mbps internet bandwidth. The library subscribed DELNET and J-GATE consortium which provide 1150 journals covering different streams of engineering technology. Inter library loan facility is available through DELNET. Some insufficient Digital learning material (DVDs and CDs) is also available in the library for the users.

Satisfaction from Library: It is reflected from the survey that most of the users are not satisfied with library services and library collection. It is also come up in the survey that language is not a barrier in seeking the information from library. It is concluded from survey that insufficient staff is the main cause of the problems faced in the library. Digital-library also required with the more number of computers and technical staff. The technical staff and users are not fully trained in using DELNET and other online services. The suggestion box is not placed in the library to get the suggestion from the users.

3.3.3 Gurukul Institute of Engineering and Technology, Kota

Gurukul Institute of Engineering and Technology Kota established in 2006 and located in RIICO Institutional Area, Ranpur Kota.

The college is approximately 15 km from city and 19 km from the Kota railway station. The college has an academic block, laboratories, polytechnic block, workshops, computer center, library and hostel facility. An auditorium is also established in the college. The institution has a large cricket ground, football, basketball playground and gymnasium for physical fitness.

Courses Offered :

P.G. Courses :	U.G. Courses
M.Tech. Programs of 2 years duration in running in following disciplines • Computer Science • Electronic and Communication • Mechanical	**B.E./B.Tech. Program of 4 yrs duration is running in the following branches** • Computer Science Engineering • Electrical Engineering • Mechanical Engineering • Electronics and Comm. Engineering • Civil Engineering

Picture 5 : Gurukul Institute of Engineering and Technology, Kota

Picture 6 : Library Gurukul Institute of Engineering and Technology, Kota

Library:

Library (General) : The library of Gurukul College of Engineering (GCE) works on an open access system and remains open from 8 AM to 5 PM. It is managed by 2 persons including librarian. It has collection of around 20,000 books, 20 Indian journal, and 6 international journals. The library does not have a separate building.

Library services: Upto 8 books for teaching for 3 months and upto 4 books for U.G. and P.G. students for 7 days can be issued from the library. The library comprises of separate Circulation, Reference, Newspaper, Periodical and Computer sections and it has book bank facility for the students. A big space available in the library for reading.

Advanced technology in library: GCE library is semi-automated and classification of books arrangement in process. Library has only 3 computers but the college has a separate computer lab. The library is subscribing the DELNET consortium which provide 1150 journals covering different streams of engineering technology. Inter library loan facility is also available through DELNET. Digital learning material (DV1Ds and CDs) is also available in the library for the users but it is not sufficient.

Satisfaction from Library: It is reflected from the survey that most of the users are not satisfied with library services and collection although language is not a barrier in seeking the information from library. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library. Digital library is required with more number of computers and technical staff. It is also come up in the survey that lack of knowledge of using e-resources is barrier in seeking the information. The suggestion box is not placed in the library to get the suggestion from the users.

3.3.4 Maharishi Arvind International Institute of Technology, Kota

Maharishi Arvind International Institute of Technology, Kota (MAIIT) belongs to the Arvind Bharti Vidyalaya Samiti, which comes into existence in 1975. It is located in RIICO Institutional Area, Ranpur Kota. The college is approximately 15 km from city and 19 km from the Kota railway station.

The institute is spread over 6 acres of land in a new locality of Kota. It includes classrooms, computer labs, conference hall, library, auditorium, various laboratories/workshops, administration block and hostel facility. The computer lab of the institute is equipped with 400 computers having licensed version of LINUX, WINDOWS with 2 Mbps BSNL Broadband connections. Audio Visual facilities like LCD, Overhead Projectors, Slide Projectors, TV, V.C.R. and Educational Movies are available for study and research. The institute has big online examination center, which has conducted several competitive exams.

Courses Offered

U.G. Courses (B.E./B.Tech.): B. Tech. program of 4 yrs duration is running in the following branches

- Electronics and Communication Engineering
- Mechanical Engineering
- Civil Engineering
- Electrical Engineering
- MBA
- MCA
- Information Technology
- Electrical and Electronics Engineering

Library

Library (General) : Maharishi Arvind International Institute of Technology (MAIIT) has a computerized library with 15,000 books, 40 National and 25 international journals and access of more than 400 international research journals

through DELNET facility. There are 2 persons to manage the library including librarian who keep it open during office hours. Books are classified with DDC mechanism. Library maintains the catalogues using OPAC and automation process is in the initial process. There are different places for reference, circulation, periodical sections and computer facility. Photocopy facility is provided for documentation.

Picture 7 : Maharishi Arvind International Institute of Technology, Kota

Picture 8: Library Maharishi Arvind International Institute of Technology, Kota

Library services : Upto 5 books for teaching faculty members for 15 days and 4 books for research scholar for 15 days, 02 books for U.G. students for 7 days can be issued. There is book bank facility for the students.

***Advanced technology in Library*:** It's library is fully computerized but it has only 6 computers. The library subscribed DELNET consortium covering different streams of engineering technology. Inter library loan facility is also available through the DELNET. Digital learning material (DVDs and CDs) is also available in the library for the users but it is not sufficient.

***Satisfaction from Library*:** It is reflected from the survey and observation that most of the users are satisfied with library services and library collection. It is also come up in the survey that language is not a barrier in seeking the information from library.

E-library also required in the library with the more number of computers and technical staff. The suggestion box is not available in the library to get the suggestion from the users. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library.

3.3.5 R.N. Modi Engineering College, Kota

R.N. Modi Engineering College (RMEC) is the first engineering college established in 2004 in Ranpur, Kota. It is located in RIICO Institutional Area of Kota. The college is approximately 15 km from city and 19 km from the Kota railway station.

The college is spread over an area of 11 acres which has class rooms with all essential amenities. The RMEC building includes class rooms, conference hall, labs, computer center, workshop, drawing halls, library with multiple copies of course titles, journals and reference books.

Courses Offered

P.G. Courses: M.Tech programs of 2 yrs duration is running in Computer Science department.

UG Courses (B.E/ B.Tech): B.Tech. program of 4 yrs duration is running in the following branches

- Computer Science Engineering
- Information and Technology Engineering
- Civil Engineering
- Mechanical Engineering
- Electronics and Communication Engineering
- Electrical Engineering

Picture 9 : R.N. Modi Engineering College, Kota

Picture 10 : Library - R.N. Modi Engineering College, Kota

Library

Library (General): Library of RN Modi College of Engineering is managed by 4 persons including librarian and it remains open from 8 AM to 2.30 PM. The library works on an open access system. It has collection of around 15000 books, 25 Indian and International journals. The books are classified with DDC scheme. With DELNET facility users can access various types of e-journals, e-books and another database. The library has different sections for requisition, circulation, periodicals, references, and photocopy. Reading room is also available in the library for the users.

Library services: Books are issued to the all the stakeholders. 5 books for teaching staff for 3 months, upto 5 books for researchers for 15 days, upto 4 books for P.G. students for 21 days and upto 3 books for U.G. students can be issued. Photocopy services is also provided to the students. There is book bank facility for in the library.

Advanced technology in Library: Automation of the library is in initial stage. The library is subscribing the DELNET services for online access upto 9000+ e-journals. Digital learning material (1443 DVDs and CDs) are also available in the library. Inter library loan (ILL) facility is available through the DELNET. The library also has Multimedia facilities. The functioning of library is managed through library management software (ERP).

Satisfaction from Library: It is reflected from the survey and observation that most of the users are satisfied with library services and library collection. It is also come up in the survey that language is not a barrier in seeking the information from library. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library. Digital library is not properly developed. More number of computers and technical staff is required. It is also come up in the survey that lack of knowledge of using e-resources is barrier in seeking the information. The suggestion box is not placed in the library to get the suggestion from the users.

3.3.6 Vedant College of Engineering and Technology, Bundi (Kota Division)

Vedant College of Engineering and Technology (VCET) was established in 2008. The College has 40469 Square meter of Land, situated at the outskirts at Kota-Bundi highway. The college is 11 Km far from Kota city and approximately 15 kms from Kota Railway station. VCET is spread over a land of 10 acres. The college has a good campus with all the educational and training facilities such as laboratories, workshops, computer labs, library, hostels, mess, canteen, transport, games and sports and recreation facility.

The building comprises of lecture theatres, tutorial rooms, laboratories, Wi-Fi connectivity and Learning Resource Center.

Courses Offered

P.G. Courses: M. Tech. programs of 2 yrs duration is running in Computer Science and Engineering in Computer Science department.

U.G. Courses (B.E/B.Tech.): B.Tech. program of 4 yrs duration is running in the following branches

- Computer Science Engineering
- Information and Technology Engineering
- Civil Engineering
- Mechanical Engineering
- Electronics and Communication Engineering
- Electrical Engineering

Library :

Library (General): The library of the college works on an open access system from 8 AM to 8 PM. The Central Library possesses around 20000 books and more than 25 Indian and 50 International journals covering all disciplines. The library is having one technical and 1 other staff to provide the necessary services. Classification of the books is under process with DDC scheme. The library comprises of the Circulation, Reference, Newspaper, Periodical and Computer section. Seating capacity is sufficient for the reading but separate reading room is required.

Picture 11 : Vedant College of Engineering and Technology, Kota

Picture 12 : Library of Vedant College of Engineering and Technology, Kota

Library services: The library provides the reference services to the readers and it has photocopy facilities for the users. 6 books for teaching staff and upto 4 books for student are issued for 15 days only. There is book bank facility for the students.

Advance Technology in Library: VCET library is fully automated and uses the IFW-ERP software. Library has only 4 computers but the college has a computer lab with sufficient number of computers. The library subscribed DELNET

consortium which provide 1150 journals and other database covering different streams of engineering technology. Inter library loan (ILL) facility is also available through the DELNET. Digital learning material (DVDs and CDs) is also available in the library for the users but it's insufficient.

Satisfaction from Library: It is reflected from the survey that most of the users are not satisfied with library services and library collection and insufficient staff is the main cause of the problems faced in the library. It is also come up in the survey that language is not a barrier in seeking the information from library. E-library is required in the library with more number of computers and technical staff. The suggestion box is not placed in the library to get the suggestion from the users.

3.3.7 Aravali Institute of Technical Studies, Udaipur

Aravali Institute of Technical Studies is established in 2008, is situated amidst the Aravali hills. It is located at a distance of 11 km from Udaipur city and opposite to Umarda Railway Station, Udaipur.

The college has fully residential campus with water recycling by a sewage treatment plant. A modern reverse osmosis water treatment plant ensures safe and clean drinking water. Classrooms and laboratories are quite spacious ventilated and have all the modern facilities. The Institute has an indoor seminar hall with the capacity of 300+ seats in which regular sessions are held to enhance the personality of the students. An open air auditorium has also been constructed to provide a seating capacity for more than 1000 students.

Courses offered

M. Tech. *:* M. Tech. program in Computer Science and Engineering is offered in the campus.

- Production Engineering
- Thermal Engineering
- Software Engineering
- Power Electronics and Electric Drives

UG Courses (B.E/B.Tech.): B.Tech. program of 4 yrs duration is running in the following branches

- Computer Science Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Electronics and Communication Engineering

Picture 13 : Aravali Institute of Technical Studies, Udaipur

Picture 14 : Library of Aravali Institute of Technical Studies, Udaipur

Library

Library (General) : The library of Aravali Institute of Technical Studies work on an open access system from 8 am to 2.30 pm (office hours). The library is having librarian, assistance librarians and one other staff to provide the necessary services. It has semi Classified collection of around 20,000 books, 30 Indian journal, and 25 international journals.

Library services: 7 books can be issued to faculty member for 6 months, but the U.G. and P.G. student can borrow 3 books for 15 days. Book bank facility for the under privileged students is available. There are different sections for requisition, circulation, periodicals, technical, references, and photocopy. Reading room is also available for the users.

Advanced technology in Library: Automation of the library is in initial stage. Library has only 4 computers but the college has different computer lab and students can access e-resources in the lab through the password which is given by the librarian. The library subscribed DELNET, which provide various type of journals covering different streams of engineering technology. Inter library loan facility is also available through the DELNET. Digital learning materials (DVDs and CDs) are available in the library for the users but it is not sufficient.

Satisfaction from Library: It is reflected from the survey that most of the users are not satisfied with library services and library collection. It is also come up in the survey that lack of knowledge of using e-resources is barrier in seeking the information. Insufficient staff is the main cause of the problems faced in the library. E-library also required in the library with more number of computers and technical staff. The suggestion box is not placed in the library.

3.3.8 Geetanjali Institute of Technical Studies, Udaipur

Geetanjali Institute of Technical Studies, popularly known as GITS was established by Geetanjali Education Society in 2002-03. It is located at airport road in Dabok area of the Udaipur city and approximately 11 kms from the city.

The institute has E-Learning Classrooms, Wi-Fi Campus, Digital Library, equipped labs, sports facilities, separate Hostel Facility for Girls and boy, Transportation Facility and Cafeteria etc.

Courses Offered

P.G. Courses: M.Tech. programs of 2 yrs duration is running in Computer Science and Engineering in Computer Science department.

U.G. Courses (B.E/B.Tech) : B.Tech. program of 4 yrs duration is running in the following branches

- Computer Science Engineering
- Automobile Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Electronics and Communication Engineering

Picture 15 : Geetanjali Institute of Technical Studies, Udaipur

Picture 16 : Library of Geetanjali Institute of Technical Studies, Udaipur

Library

Library (General) : The library of Geetanjali Institute of Technology work on an open access system from 8 am to 2.30pm (office hours). The library is having one librarian, two assistance librarians and two other staff to provide the necessary services. It has a collection of around 45000 books; 45 Indian and 25 international journals are subscribed in the library. Classifications of books are done with DDC scheme. With the DELNET facility users can access lots of e-journals, e-books and another database. The library comprises of the Circulation, technical, Reference, Newspaper, Photocopy, Periodical and Computer section.

Library services: Upto 10 books for faculties for 3 months can be issued. But the U.G and P.G. student can borrow 5 books for 15 days. Photocopy service is provided to the students. There is a book bank facility for the students. With the DELNET facility users can access lots of e-journals, e-books and another database. There are different sections requisition, circulation, periodicals, technical, references, and photocopy. Reading room is also available for the users.

Advanced technology in Library: Automation of the library is in initial stage. Library has only 4 computers but the college has computer lab. A separate digital knowledge centre has been established in order to enable the users to browse the e-journals, e-learning materials, digital library collections and online journals. The library subscribed DELNET which provide 1150 journals covering different streams of engineering technology. Inter library loan facility is available through the DELNET. Digital learning material (DVDs, CDs and audio visual) is also available in the library for the users but it is not sufficient.

Satisfaction from Library: It is reflected from the survey that most of the users are not satisfied with library services and library collection although language is not a barrier in seeking the information from library. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library. Digital-library also required with the more number of computers and technical staff. As per the discussion the technical staff and users were not fully trained in using

DELNET and other online services. The survey finds out that lack of knowledge of uses of e-resources is barrier in seeking the information. The suggestion box is not available to get the suggestion from the users.

3.3.9 SS College of Engineering, Udaipur

SS College of Engineering (SSCE) is located at Umarda in SS Hills, Jhamar Kotra Road of Udaipur. It is approximately 11 kms from the Udaipur city. SSCE was established under the aegis of SS Education Trust which was set up in the year 2007.

SSCE has good infrastructure facility which comprises of labs, classrooms with audio-visual aids, Internet Lab, +Seminar/Conference Hall, hostels separate for girls and boys, mess, college canteen, healthcare centre, gymnasium, squash, tennis, Recreational facility etc.

Courses Offered:

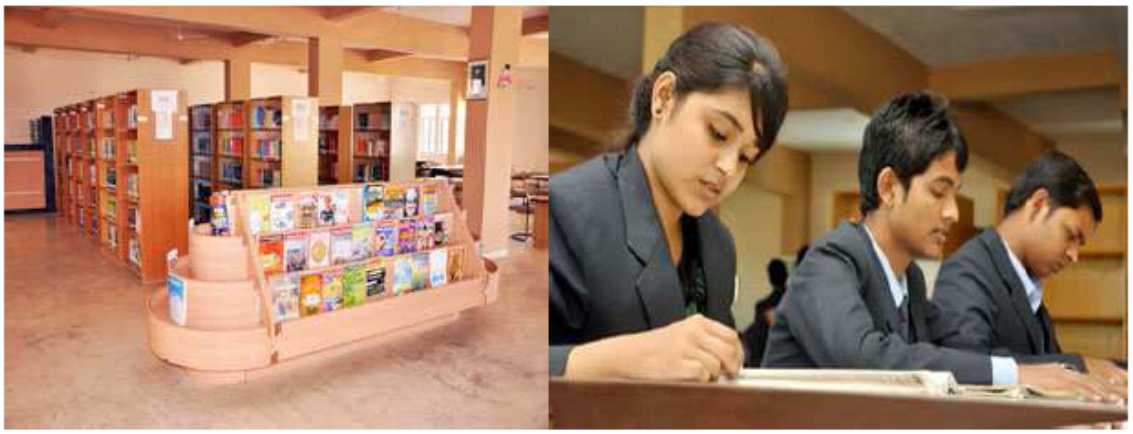
P.G. Courses : M.Tech. programs of 2 yrs duration is running in following branches/ departments.

- Production Engineering (Mechanical Engineering)
- Digital Communication (Electronics and Communication)

UG Courses (B.E/B.Tech): B.Tech. program of 4 yrs duration is running in the following branches

- Mining Engineering
- Mechanical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science Engineering
- Electrical Engineering
- Electronics and Communication Engineering
- Electrical and Electronics Engineering

Picture 17 : S.S. College of Engineering, Udaipur



Picture 18 : Library of S.S. College of Engineering, Udaipur

Library

Library (General) : SS College of Engineering has a computerized library with 20,000 books, 50 National and 25 international journals with DELNET facility that allows accessing 1,800 other libraries across the globe. There are 2 persons to manage the library including librarian who keep it open during office hours. Books are classified with DDC mechanism. Library maintains the catalogues using OPAC. There are different places for reference, circulation, periodical sections and computer facility. Photocopy facility is provided for documentation and automation process is in the initial process.

Library services: 5 books for teaching staff for 15 days, 4 books for research scholar for 15 days, 02 books for U.G. and P.G. students for 7 days can be issued at a time. Photocopy services is available to the students. There is a book bank facility for the students.

Advanced technology in Library: Library of the S.S. Collage is fully computerized but it has only 6 computers. The library subscribed DELNET consortium which provide 1800 journals covering different streams of engineering and technology. Inter library loan facility is also available through the DELNET. Digital learning material (DVDs and CDs) is available in the library for the users but not sufficient.

Satisfaction from Library: It is reflected from the survey and observation that most of the users are satisfied with library services and library collection. Language is not a barrier in seeking the information from library. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library. Digital-library is required with more number of computers and technical staff. As per the discussion the technical staff and users are not fully trained in using DELNET and Other online services. The suggestion box is not placed in the library.

3.3.10 Sunrise Group of Institutes, Udaipur

SUNRISE Group of Institutes, Udaipur established in 2006 at the outskirts of Udaipur city in Umarda village, Near. Bharimata Temple, Jhamar Kotra Road Udaipur and approximately 11 kms from the Udaipur city. SGI campus is spread over more than 10 acre of land in noise free area. College has spacious classrooms fitted with LCD projectors, white boards and audio- video system. Separate boys and girls hostels are provided to the students on campus.

Hostels have common computer rooms with wireless Wi-Fi internet connectivity. Its computing infrastructure includes 5 Servers, 200 Workstations, 10 Printers/Scanners. Notes of every subject is also uploaded on Moodle software by the faculty and improved for quality for the students benefit well in advance before the topic is taken up in class.

P.G. Courses: M.Tech. programs of 2 yrs duration is running in Structure Engineering branch in Civil Engineering department

U.G. Courses (B.E/B.Tech): B.Tech. program of 4 yrs duration is running in the following branches

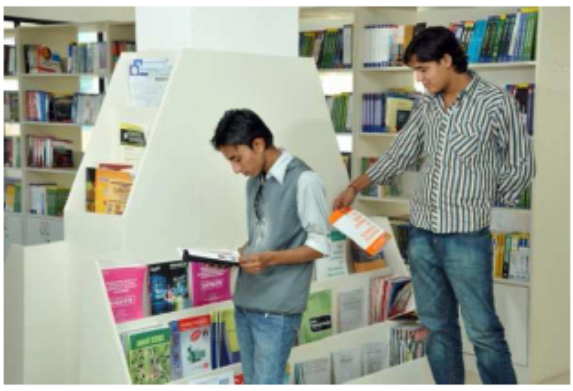
- Civil Engineering
- Computer Science Engineering
- Chemical Engineering
- Mechanical Engineering
- Electrical and Electronics Engineering
- Electronics and Communication Engineering

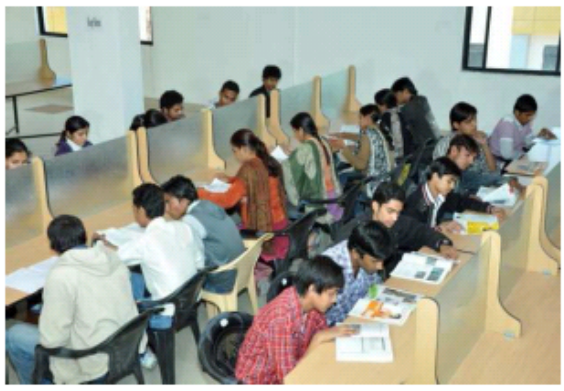
MBA (2 yrs program): Specialization in Marketing, Finance, Human Resource, Information Technology Production and Operation

Nursing: GNM, *B.Sc. Nursing :* Physiotherapy

Diploma : 3 Year Diploma in Civil Engineering, Mechanical Engineering, Electrical Engineering

Picture 19 : Sunrise Group of Institutes, Udaipur





Picture 20 : Library of SUNRISE Group of Institutes, Udaipur

Library

Library (General): Library of Sunrise Group of Institutions works on an open access system from 8 AM to 2 PM. The Central Library possesses around 16000 books and approximately 35 Indian and 10 foreign periodicals. The library is having one technical and 2 other staff to provide the necessary services. The books are not classified and the library has no separate building rather established in the building of college. But separate reading room was available for users.

Library services : The library provides the reference services to the readers and it has photocopy facilities for the users. 5 books for teaching staff for 1 month, 3 books for other staff for 14 days and 5 books for 14 days to UG/PG students can be issued. There is a book bank facility for the students. The library has Circulation, Reference, Newspaper, Periodical and Computer section.

Advance Technology in Library: Library is fully automated using the ERP software it provides the internet, e-journals, CD/DVD, Inter Library Loan (ILL), OPEC and DELNET facilities to the users. There are only 5 computers available in the library.

Satisfaction from Library: It is reflected from the survey that most of the users are not fully satisfied with library services and library collection. Language is not a barrier in seeking the information from library. It is also come out from survey that insufficient staff is the main cause of the problems faced in the library. Digital-library is required with more number of computers and technical staff. As per the discussion the technical staff and users were not fully trained in using DELNET and Other online services. It is also come up in the survey that lack of knowledge of using e-resources is barrier in seeking the information. The suggestion box is not available in the college.

3.3.11 Nathdwara Institute of Engineering and Technology, Nathdwara (Rajsamand)

Nathdwara Institute of Engineering and Technology Nathdwara was established in 2010 under the auspices of Vallbh Darshan Society. The campus is situated in the Aravali mountain ranges and spread over 15 acres at Upali Oden, Nathdwara (Distt.-Rajsamand) it is 4 kilometers away from Nathdwara town. The campus is divided into various functional zones like academics and administrative block, hostels, and residential complex for faculty and staff, covering more than 2,00,000 square feet. It has co-educational facilities with separate hostel accommodation for boys and girls. The institute has 2 Computer Laboratories attached with HP XEON Servers connected to 100 Dual Core nodes in two labs together with UPS, DVD Writer, Scanner and Printers in each Lab, which are networked through Wireless LAN and internet. The Institute provides bus facility for the students from different locations of Udaipur, Rajsamand and Nathdwara.

*U.G. Courses (B.E/B.Tech):*B.Tech program of 4 yrs duration is running in the following branches

- Civil Engineering
- Mechanical Engineering
- Electrical Engineering
- Electronics and Communication Engineering

Library

Library (General): The Nathdwara Institute of Engineering and Technology (NIET) library work on an open access system from 8 am to 2.30 pm (office hours). The library is having one librarian and 1 other staff to provide the necessary services. It has collection of around 15000 books and subscribing 15 Indian and 4 international journals. The books are not classified.

Picture 21 : Nathdwara Institute of Engineering and Technology, Nathdwara

Picture 22 : Library of Nathdwara Institute of Engineering and Technology, Nathdwara

***Library services*:** Upto 10 books for faculties for 1 months can be issued. But the U.G. and P.G. student can borrow upto 5 books for 15 days only. Photocopy services provided to the students. There is book bank facility for the students. The library comprises of the Circulation, Reference, Newspaper, Periodical, Photocopy and Computer sections Reading space is also available for the users but not separately.

Advanced technology in Library: Automation work is undergoing. Library has only 6 computers but the college has separate computer lab. The library is subscribing the DELNET which provide 1150 journals covering different streams of engineering and technology. Inter library loan facility is also available through DELNET. Digital learning material (CDs and DVDs) is available in the library for the users but these are not sufficient.

***Satisfaction from Library*:** It is reflected from the survey that most of the users are not satisfied with library services and collection and insufficient staff is the main cause of the problems in the library. Digital-library is required with sufficient number of computers and technical staff. As per the discussion the technical staff and users are not fully trained in using DELNET and other online services. It is also come up in the survey that lack of knowledge of using e-resources is barrier in seeking the information. The suggestion box is not placed.

3.3.12 Shrinathji Institute of Technology and Engineering (SITE), Nathdwara (Rajsamand)

Shrinathji Institute of Technology and Engineering (SITE), Nathdwara was established in 2003 and named after Lord Shrinathji. The Institute is spread over an area of about 25 acres of land located at Upali Oden, Nathdwara 40 kms from Udaipur (Rajasthan). The Institute is well connected with Jaipur-Ahmedabad National Highway.

The institute has a good infrastructure which includes a large number of class rooms, lecture theaters and laboratories. The institute has 12 Computer Laboratories with net connectivity. The Institute provides bus facility for the students from different locations of Udaipur, Rajsamand and Nathdwara. Separate hostels are available for boys and girls. The College possesses an auditorium with a seating capacity of 800 with modern audiovisual facilities.

Courses offered

P.G. Courses: M.Tech programs of 2 yrs duration is running in following branches/ departments.

- Software Engineering
- Digital Communication and Power System
- Production Engineering (Mechanical Engineering)

*UG Courses (B.E/B.Tech):*B.Tech program of 4 yrs duration is running in the following branches

- Mechanical Engineering
- Electrical Engineering
- Electronics and Communication Engineering
- Computer Engineering and Information Technology

DMLT (Diploma in Medical Laboratory Technicians) and BPT (Bachelor in Physiotherapy) are also running in the college.

Library

Library (General): The Shrinathji Institute of Technology and Engineering (SITE) library work on an open access system from 8 am to 2.30 pm (office hours). The library is having one librarian and 1 other staff to provide the necessary services. Due to this the workload on the staff is increased, technical work is could not be completed in time and the requirement of users is not fulfilled. It has collection of around 14000 books, 30 Indian journal, and approximately 10 international journals. Books are not classified.

Picture 23: Shrinathji Institute of Technology and Engineering, Nathdwara

Picture 24 : Library of Shrinathji Institute of Technology and Engineering, Nathdwara

Library services: Upto 7 books for teaching staff and 2 books for non-teaching staff can be issued for 1 months. But the U.G. and P.G. student can borrow upto 2 books for 15 days only. Photocopy service is provided to the students. There is book bank facility for the students. There are different sections in the library like-circulation, periodicals, references, and photocopy. Reading room is available for the users but it is not separate.

Advanced technology in Library: The SITE library is not fully automated and there are only 4 computers available in the library. The library subscribed DELNET consortium which provide 1150 journals covering different streams of engineering technology. Inter library loan facility is also available through DELNET. Digital learning material (DVDs and CDs) is available in the library for the users but not sufficient.

Satisfaction from Library: It is reflected from the survey that most of the users are not satisfied with library services and library collection although language is not a barrier in seeking the information from library. It is also coming out from survey that insufficient staff is the main cause of the problems faced in the library. Digital-library also required with more number of computers and technical staff. As per the discussion the technical staff and users are not fully trained in using DELNET and Other online services. It is also come up in the survey that lack of knowledge of using e-resources is barrier in seeking the information. The suggestion box is not placed in the library to get the suggestion from the users.

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CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

CHAPTER

4

DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

In this chapter the data collected from the Under Graduate (UG), Post Graduate (PG), Ph.D. students and faculty members of Engineering Colleges in Kota and Udaipur division is presented and analysed by using appropriate statistical tools and techniques. The background information of the respondents including the sample size, college wise distribution of questionnaires is also described in this part of the thesis.

The collected data is analysed in both the ways i.e. analytically and statistically. The options in each question are made as attributes for statistical analysis and the attribute value is assigned from 1 to 4. By this assignment of attribute values the each question is analysed on 4 point scale. Various measures of central tendency of data like mean, mode, median and standard deviation are used to analyse the data statistically. The ranking wherever necessary is done on the basis of mean of the attribute value. The correlation coefficient and chi square test values are also calculated for comparative analysis of data received. The statistical analysis is done to show the variation in information seeking behaviour of the users of both the divisions of Rajasthan.

4.2 QUESTIONNAIRE

A questionnaire with 35 points/ questions was prepared which is divided in 4 broad areas namely

i) Personal Information

ii) About the Library Services

iii) ICT Use in Library

iv) Opinions of User

(i) **Personal Information**: Personal information is collected covering 6 points including Name, Gender, Name of Institute, Department, Class, etc. This basic information reflects the background of the students. The information seeking behaviour varies according to institute, course and department.

(ii) **About the Library Services:** The information about the library services is surveyed in this part and it is collected in 17 points which covers almost all the aspects of the library services. The points regarding the infrastructure and manpower in library are covered. Status of books, journals and other facilities are also analyzed in part of the questionnaire.

(iii) **ICT Use in Library:** Now a day's Information and Communication Technology becomes an integral part of any service or a system. It is also true in case of library. Few questions are designed to get concrete information on the ICT use in different libraries of various colleges. The details about e-resources like e-books, e-journals are collected through these questions. The internet use and internet facility are also evaluated in this part.

(iv) **Opinions of User**: The characteristics of the information seeking behaviour can only be analyzed by the opinion of the user. Last part of the questionnaire covering four questions is dedicated for this purpose. The stakeholders were requested to give their frank opinion on these questions as per their choice of giving response to these questions. Independent suggestions of the users are also included in this part of the questionnaire.

4.3 SAMPLE AND SAMPLE SIZE

A homogeneous sample is formed including engineering under graduate and post graduate students, research scholars and faculty members. Twelve colleges are selected in Kota and Udaipur region having 6 colleges in each region (detail given in Chapter 3).

Table 4.1 : Sample Size

Questionnaire Distributed	Received	Percentage
1310	862	65.8

650 questionnaires were distributed among B.Tech. students out of which 379 responded. Similarly 259 M.Tech. students responded out of 330 distributed questionnaire. 330 Ph.D. scholars and faculty members were also selected for survey from which 225 responded. Hence 65.8 % of stake holders participated in the survey process (Table 4.1). This data exhibits a homogeneous sample of respondents.

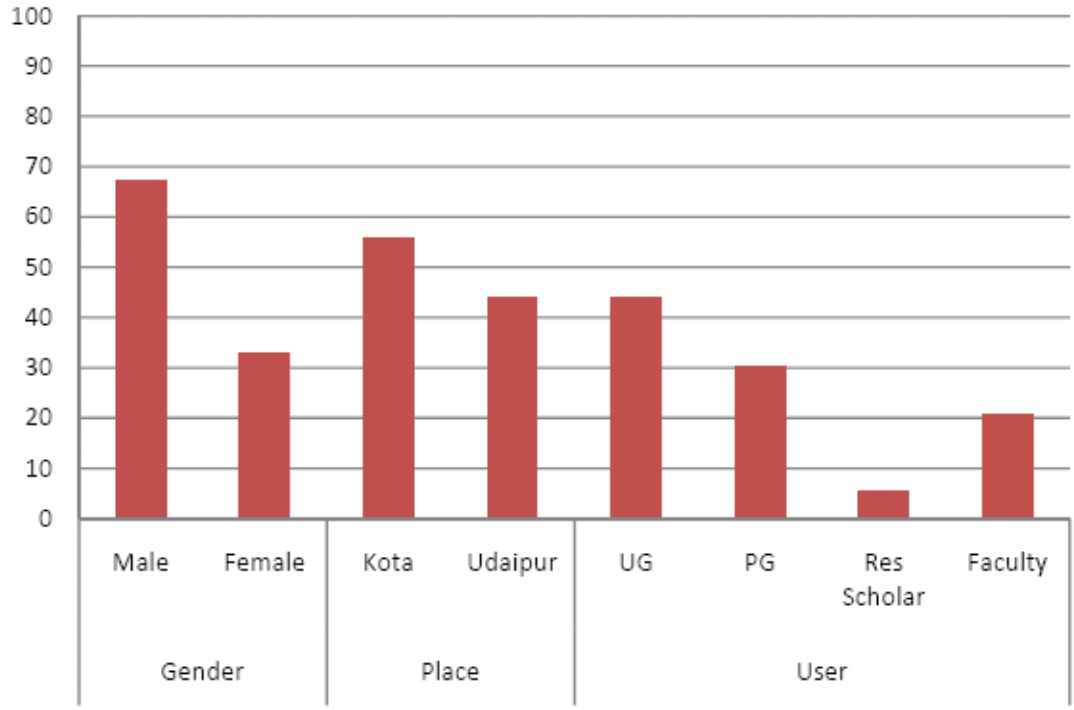
4.4 DEMOGRAPHIC DETAILS OF RESPONDENT

Demographically the data is homogeneously distributed except the Rajasthan Technical University, as it is the only affiliating university with a large number of enrolments in almost all the branches of engineering.

Table 4.2 : Demographic Details of Respondent

Group	Description	Frequency	%
Gender	Male	579	67.2
	Female	283	32.8
	Total	862	100
Place	Kota	482	55.92
	Udaipur	380	44.08
	Total	862	100
User	UG	379	43.97
	PG	259	30.05
	Res Scholar	45	5.22
	Faculty	179	20.77
	Total	862	100

Fig. 4.1 : Demographic Distribution of the Respondents



Out of 862 respondents 67.2% male students contributed in the sample and 32.8 % female. Because the Rajasthan Technical University is in Kota region so 55.92% of the sample belongs to this region and remaining 44.08% belongs to the Udaipur region (Table 4.2 and Figure 4.1).

The demographic data also reflects that U.G. students with 43.97 % response are much ahead than the other stakeholders. In remaining response 30.05 % are Post Graduate students, 5.22 % are research scholars and 20.77 % are faculty members. So jointly the faculty and research scholars with 26% response contribute in sample significantly.

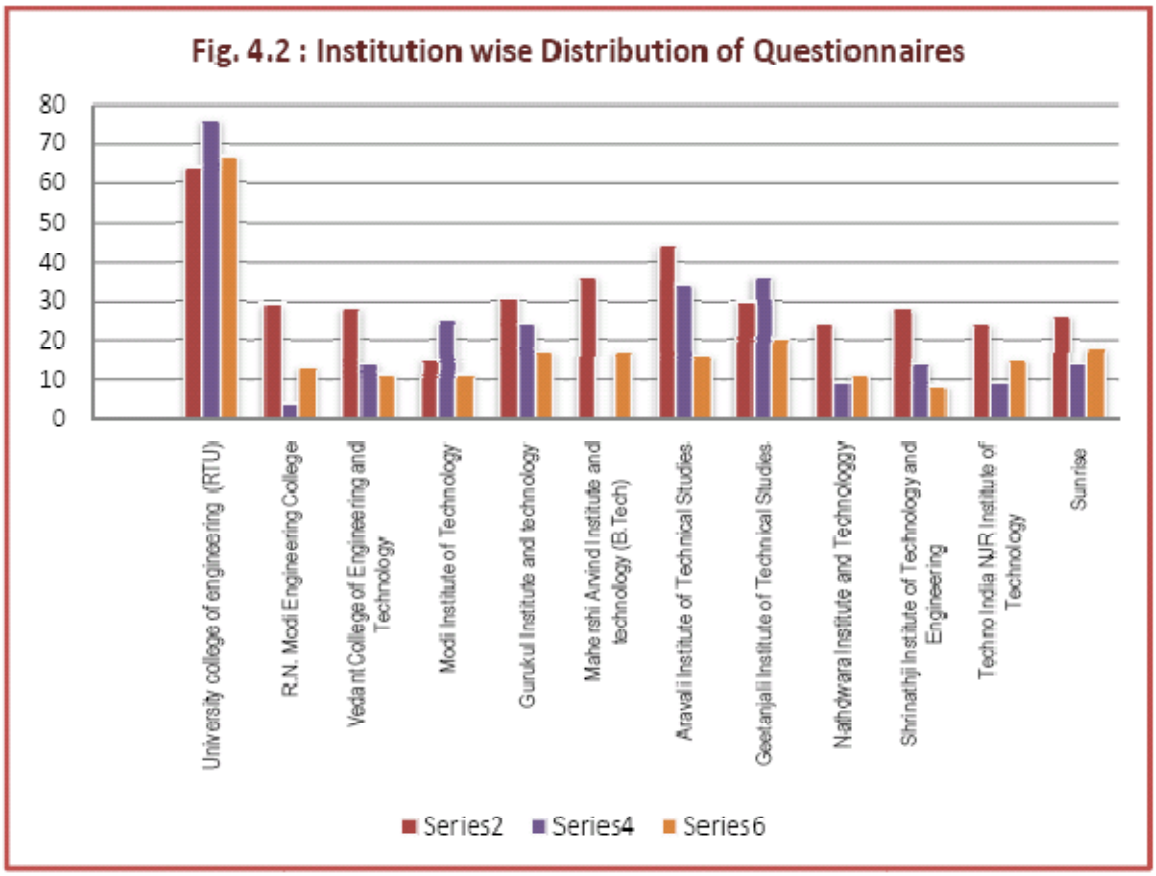
4.5 INSTITUTION WISE DISTRIBUTION OF QUESTIONNAIRES

Institution wise distribution of the questionnaires is depicted in Table 4.3. From the table it is reflected that again Rajasthan Technical University (RTU) is most contributing institution and Nathdwara Institute and Technology of Udaipur division is contributing the least. This situation arises because of the fact that RTU has all the courses in almost all the branches and numbers of students with faculty members are much higher than the other institutions.

Table 4.3 : Institution wise Distribution of Questionnaires

S No.	Colleges	District	B.Tech		M.Tech		Faculty		Total		%
			Distributed	Received	Distributed	Received	Distributed	Received	Distributed	Received	
1	Rajasthan Technical University (University College of Engineering)	Kota	100	64	100	76	100	67	300	207	24.01
2	Modi Institute of Technology	Kota	50	15	30	25	20	11	100	51	5.92
3	Gurukul Institute and technology	Kota	50	31	30	24	20	17	100	72	8.35
4	Mahershi Arvind Institute and Technology	Kota	50	36	0	0	20	17	70	53	6.15
5	R.N. Modi Engineering College	Kota	50	29	10	4	20	13	80	46	5.34
6	Vedant College of Engineering and Technology	Kota	50	28	20	14	20	11	90	53	6.15
7	Aravali Institute of Technical Studies	Udaipur	50	44	40	34	20	16	110	94	10.9
8	Geetanjali Institute of Technical Studies	Udaipur	50	30	40	36	30	20	120	86	9.98
9	SS College of Engineering	Udaipur	50	24	10	9	20	15	80	48	5.57
10	SGI, Udaipur	Udaipur	50	26	20	14	20	18	90	58	6.73
11	Nathdwara Institute and Technology	Udaipur	50	24	10	9	20	11	80	44	5.1
12	Shrinathji Institute of Technology and Engineering, Nathdwara	Udaipur	50	28	20	14	20	8	90	50	5.8
	Total		**650**	**379**	**330**	**259**	**330**	**224**	**1310**	**862**	**100**

Out of 1310 distributed questionnaires 650 (49.62 %) were distributed to UG and 330 (25.19 %) each to M.Tech. and Faculty / Research Scholars. The trend in filled responses also follows the same distribution pattern. 58.31% B.Tech., 78.49% M.Tech. and 67.88% faculty members and research scholars contributed in the response, consequently 65.8% filled response were received.



Series 2 : B.Tech., Series 4: M.Tech. and Series 6: Faculty

The share of B.Tech. students were 43.95%, M.Tech. students were 30.05% and 25.99 % were of faculty and research scholars. Out of 862 received responses 482 (55.92%) were from Kota region and remaining 380(44.08%) from Udaipur region (Figure 4.2).

4.6 ABOUT THE LIBRARY SERVICES

The general views of stakeholders are analyzed on information seeking behaviour with respect to their primary purpose of seeking information, primary sources of information, dependency and mode of access.

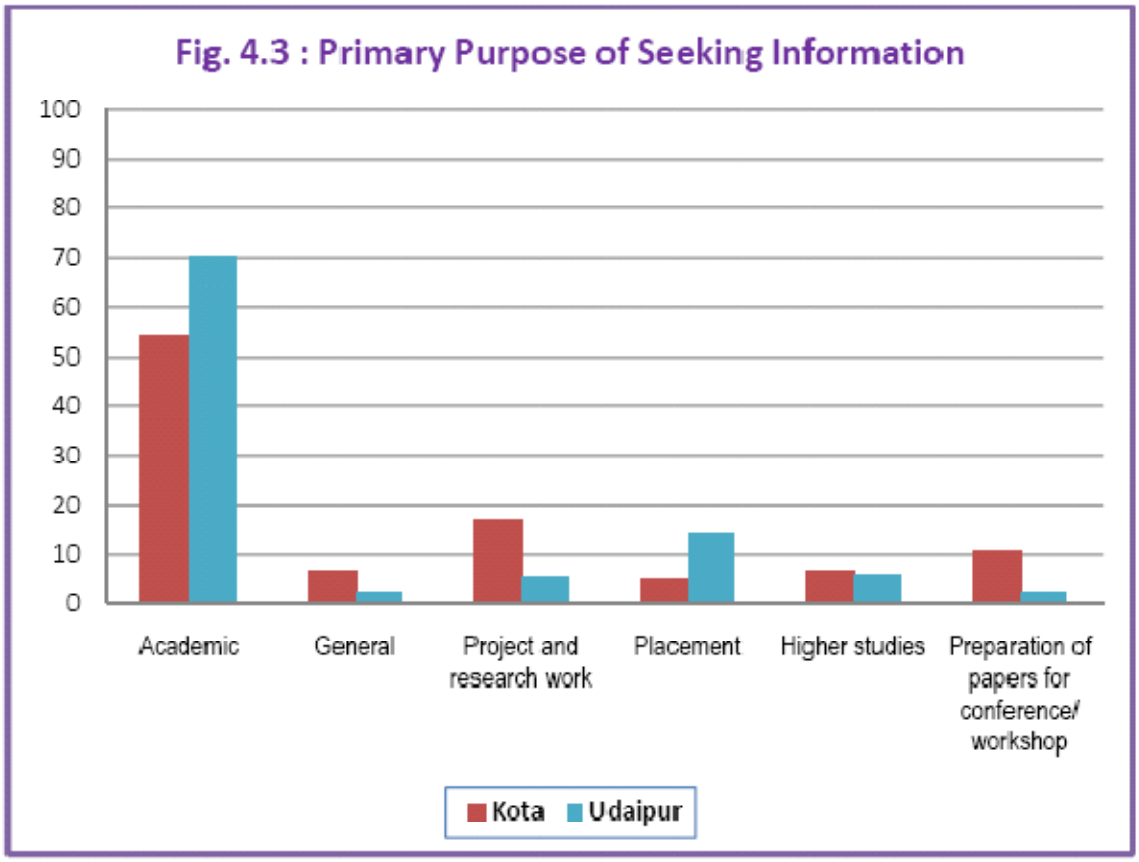
4.6.1 Primary Purpose of Seeking Information

The primary purpose of seeking information has been analyzed and the same is shown in Table 4.4 and figure 4.3. The question includes all the points for which the respondents visit the library. The trend shows that most of the respondents (61.37%) in both the region visit the library for academic purpose. But the trend is different in case of other purposes.

Project and research work is given second priority by the Kota region students (16.8%) but the same is given forth priority by the users of Udaipur region. Preparation of papers for conference/workshop is given third priority by Kota region respondents (10.58%) while it is on fifth priority by the Udaipur region stake holders. The situation arises because most of the research scholars and post graduate students belong to Kota region. Higher studies and general purpose visit is given fourth priority by the Kota region respondents while these purposes are given third and fifth priorities by the Udaipur region students

Table 4.4 : Primary Purpose of Seeking Information

S.No.	Purpose ↓	Kota		Udaipur		Overall	
		Responses (%)	Rank	Responses (%)	Rank	Responses (%)	Rank
1	Academic	262 (54.36)	1	267 (70.26)	1	529 (61.37)	1
2	General	32 (6.64)	4	8 (2.11)	5	40 (4.64)	6
3	Project and research work	81 (16.8)	2	21 (5.53)	4	102 (11.83)	2
4	Placement	24 (4.98)	5	54 (14.21)	2	78 (9.05)	3
5	Higher studies	32 (6.64)	4	22 (5.79)	3	54 (6.26)	5
6	Preparation of papers for conference/ workshop	51 (10.58)	3	8 (2.11)	5	59 (6.84)	4
	Total	**482 (100.00)**		**380 (100.00)**		**862 (100.00)**	



The least priority by the Kota respondents is given to placement but it is second preferred choice of the Udaipur region respondents. Overall the second priority is given to project and research work followed by placement search.

The least priority is given to general purpose. The correlation coefficient value between both the region responses is 0.94773 which shows the data of both the regions is highly correlated and consistent. The chi square coefficient is also calculated for both the regions with 5 degrees of freedom taking mean as the standard value. The chi square value is 7.6491 for Kota region which is lower than the table value 11.1 for 95 % confidence interval which means there is no significant variation with mean data. The chi square value for Udaipur region is 12.27 which is higher than table value. A Significant variation with mean data is observed for this region.

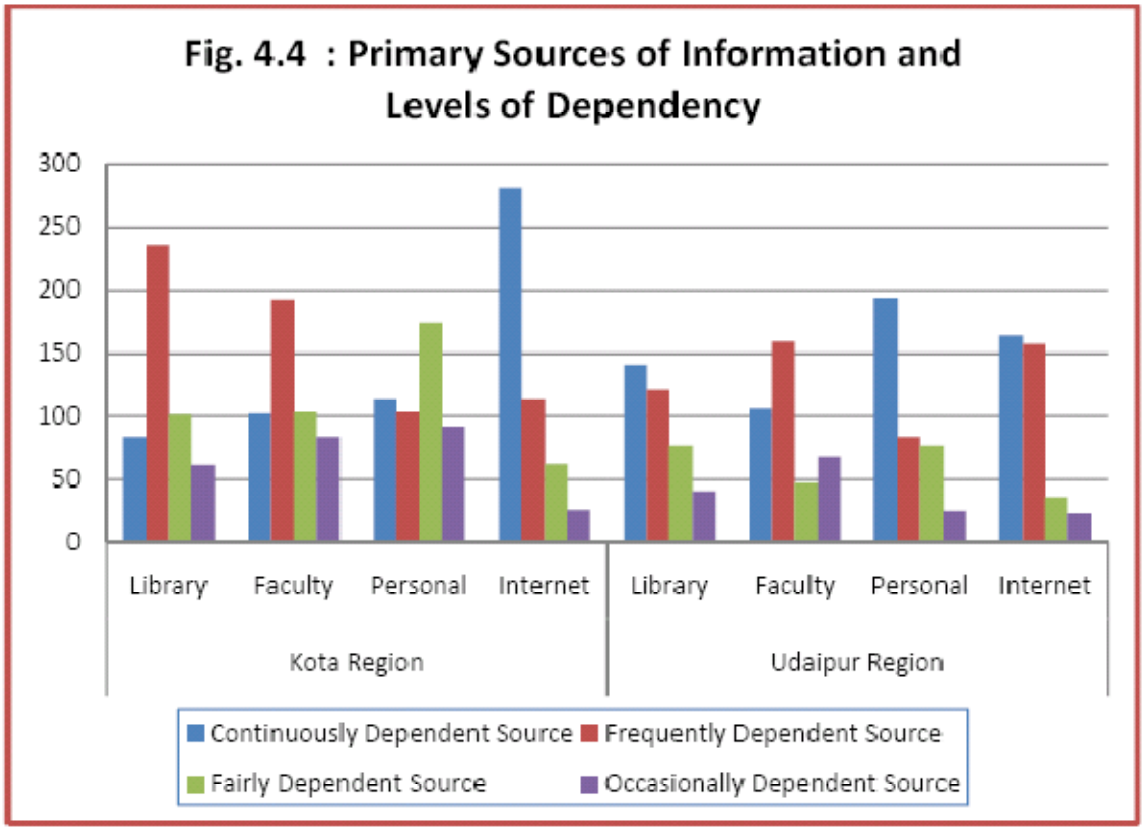
4.6.2 Primary Sources of Information and Level of Dependency

The primary source of information and the level of dependency by the respondents are analyzed. The primary sources are classified into library, faculty, personal contact and internet. Table 4.5 depicts the primary sources on which the students rely upon for getting information and to what extent they depend upon the primary source. The table shows that most of respondents continuously depend on internet but Udaipur people preferred personal contacts to get the information. After that internet library is the most preferred mode of getting information for Kota respondents but the trend is different in case of Udaipur region where faculty advice is the second most preferred mean of communication.

Table 4.5 : Primary Sources of Information and Levels of Dependency

S.No.	Sources for information seeking ↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Library	Faculty	Personal	Internet	Library	Faculty	Personal	Internet
1	Continuously Dependent Source	84 (17.43)	102 (21.16)	113 (23.39)	281 (58.32)	141 (37.11)	106 (27.89)	194 (51.05)	164 (43.16)
2	Frequently Dependent Source	236 (48.96)	193 (40.04)	103 (21.42)	113 (23.40)	121 (31.84)	159 (41.84)	84 (22.11)	157 (41.32)
3	Fairly Dependent Source	101 (20.95)	103 (21.37)	174 (36.00)	62 (12.90)	77 (20.26)	47 (12.37)	77 (20.26)	36 (9.47)
4	Occasionally Dependent Source	61 (12.66)	84 (17.43)	92 (19.20)	26 (5.40)	41 (10.79)	68 (17.89)	25 (6.58)	23 (6.05)
	Total	**482**	**482**	**482**	**482**	**380**	**380**	**380**	**380**
	Attribute Value	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**

If the data is analysed source wise library is frequently dependent source in both Kota and Udaipur region. Now a day's most of the information is available on internet so it is the continuously dependent source to get information for Kota region respondents and preferred by Udaipur region respondents.



The received data is also analysed by assigning the attribute value from 1 to 4. The internet as source of information the median and mode coincides and has fair relation with mean and it is the continuously dependent source with standard deviation 0.10236.

Table 4.6 : Statistical Analysis for Kota Region

S.No	Dependency on source↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Continuously Dependent Source	580	1	4	3.0189	**4**	4	0.10236	1
2	Frequently Dependent Source	645	1	4	2.1441	2	1	0.09239	2
3	Fairly Dependent Source	440	1	4	3.0189	2	3	0.10671	1
4	Occasionally Dependent Source	258	1	4	2.3156	2	3	0.13974	3

But in Udaipur region the personal contact to get the information is preferred and it is the continuously dependent source to get the information. Here both mode and median coincides and these are sufficiently close to mean (2.6297).

Table 4.7 : Statistical Analysis for Udaipur Region

S.No	Dependency on source↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Continuously Dependent Source	605	1	4	2.6297	3	3	0.09152	3
2	Frequently Dependent Source	521	1	4	2.8369	2	2	0.09809	2
3	Fairly Dependent Source	237	1	4	3.2785	2	3	0.10778	1
4	Occasionally Dependent Source	157	1	4	2.1911	1	2	0.10236	4

The reason for this difference is

(i) The Rajasthan Technical University which is the only affiliating university is established in Kota.

(ii) The infrastructure in terms of ICT is well maintained in Kota region compared to Udaipur region.

(iii) Most of the well known e- resources like e-journals; e-books are subscribed in RTU and University College of Engineering, a constitute college of the university. The students of other colleges of Kota can also access these e-resources at RTU. Hence internet is most preferred. But this facility is not available in Udaipur region so the users continuously depend on the personal contacts to get information.

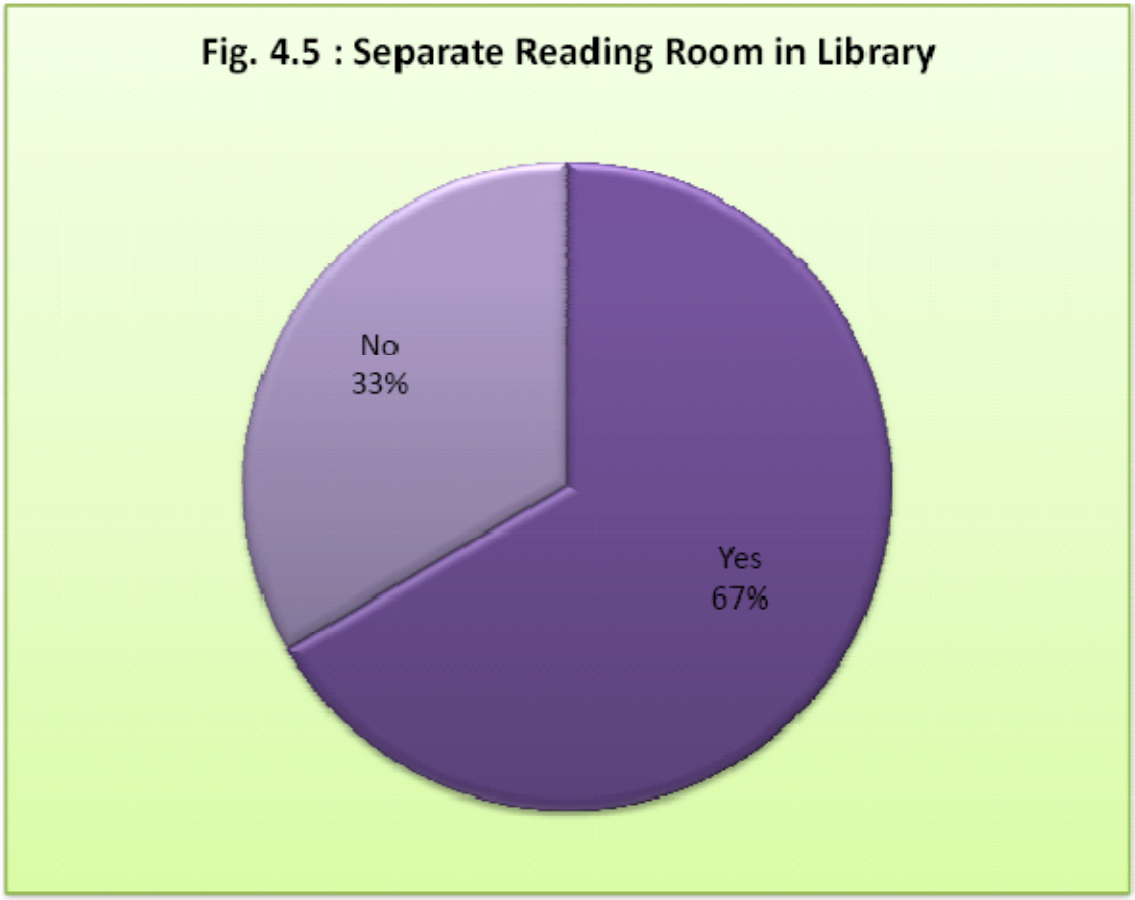
4.6.3 Separate Reading Room in Library

As library is known as the place to get information so the respondents were asked where their institution has separate reading room in library. 66.59% of the respondents say yes and they use this facility also (Table 4.8 and Figure 4.5).

But there is significant figure (33.41%) of respondents who says that there is no separate reading room in library and there is need for that. Most of these respondents belong to the Kota region.

Table 4.8 : Separate Reading Room in Library

S.No.	Statement ↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	296 (61.38)	278 (73.24)	574 (66.59)
2	No	186 (38.62)	102 (26.76)	288 (33.41)
	Total	**482**	**380**	**862**

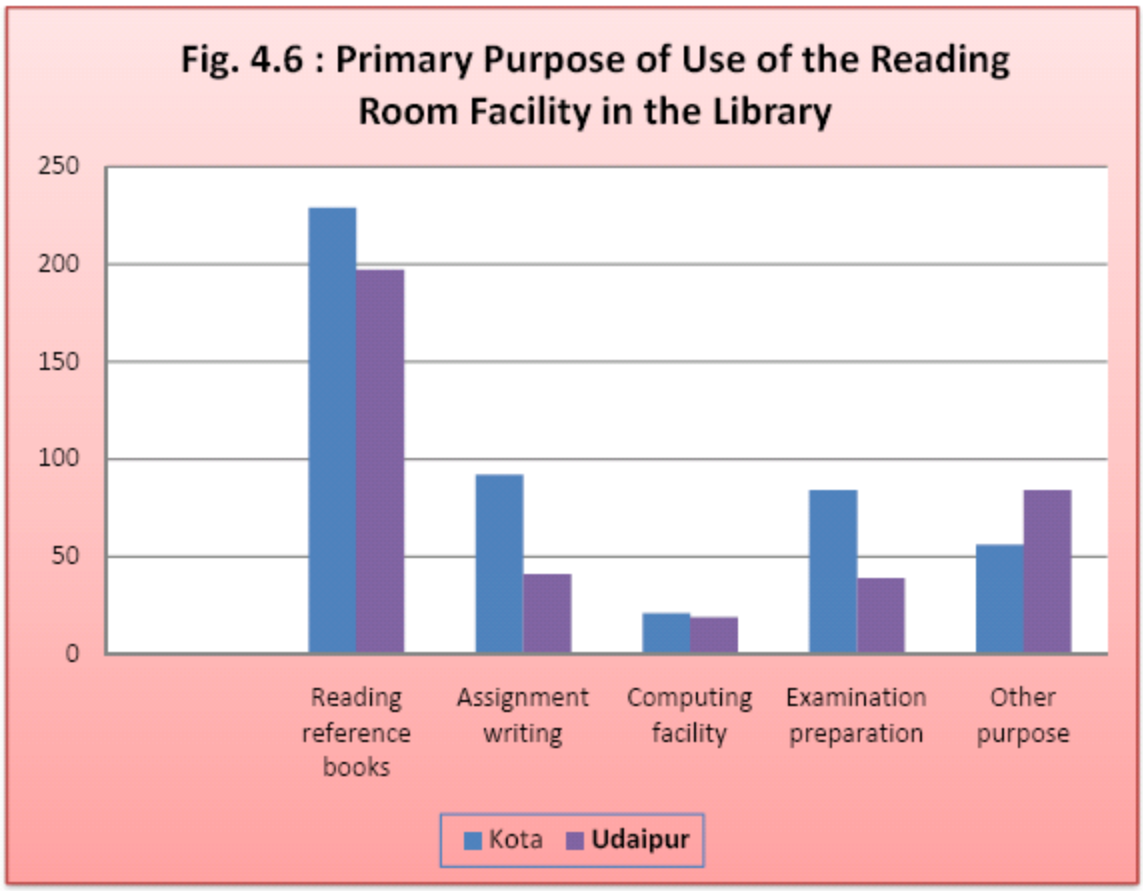


4.6.4 Primary Purpose of Use of the Reading Room

A subsidiary question regarding the purpose of use of reading room was also asked through the questionnaire whose answers are shown in the Table 4.9 and Figure 4.6.

Table 4.9: Primary Purpose of use of the reading room facility in the library

S.No.	Purpose of use↓	Kota		Udaipur		Combined	
		Response (%)	Rank	Response (%)	Rank	Response (%)	Rank
1	Reading reference books	229 (47.59)	1	197 (51.84)	1	426 (49.42)	1
2	Assignment writing	92 (18.99)	2	41 (10.79)	3	133 (15.43)	3
3	Computing facility	21 (4.30)	5	19 (5.00)	5	40 (4.64)	5
4	Examination preparation	84 (17.4)	3	39 (10.26)	4	123 (14.27)	4
5	Other purpose	56 (11.72)	4	84 (22.11)	2	140 (16.24)	2
	Total	**482**	**-**	**380**	**-**	**862**	**-**
	Chi square test value	2.8561	-	4.79	-	-	-
	Degree of freedom	4	-	4	-	-	-



Most of the respondents use the reading room to study the reference material, available in the library, which cannot be issued. The second preferred use (16.24%) of reading room is other purpose which includes reading of newspaper, magazines, other materials and discussion with other fellow colleagues. In the engineering studies assignments writing is an integral part of the curriculum hence the study room and the library is well used for this purpose also on second or third priority. Examination preparation (14.27%) and use of computing facilities (4.64%) are given the last priorities in terms of reading room of library as other platforms are available for these purposes.

The correlation between the surveys of Kota and Udaipur region is above 0.9 which means that the library reading room use pattern is almost similar in both the regions. Chi square test value is also calculated for both the region independently with respect to the combined regions with 4 degrees of freedom. These are 2.8561 for Kota and 4.79 for Udaipur region which is lower than the table value with 95% of significance which shows the variation of these variables is insignificant in the opinion of respondents of individual regions.

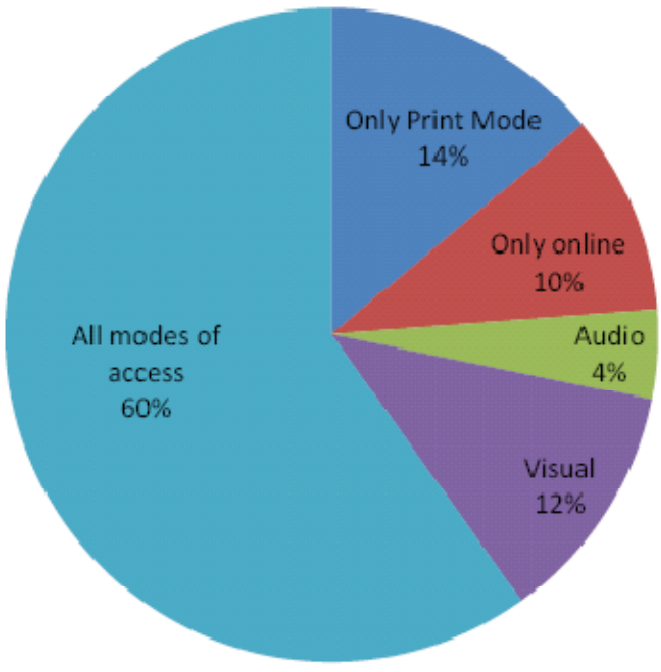
4.6.5 Preferred Mode of Access

To judge the seeking behaviour, the stakeholders were asked about the mode of access they prefer. Unanimously all are of the opinion that they use all the mode of access. On individual preferences the respondents prefer the online mode with second priority. Material available on visual mode is on third priority followed by online mode. The visual mode is also become important now a day's among users that includes online videos, pictures, tutorials and power point presentations which students prefer over other online/print mode. To get any information the audio mode was on last priority (Table 4.10 and Fig. 4.7).

Table 4.10 : Preferred Mode of Access

S.No	Purpose of use↓	Kota		Udaipur		Combined	
		Response (%)	Rank	Response (%)	Rank	Response (%)	Rank
1	Only Print Mode	16 (3.31)	5	13 (3.42)	2	29 (3.36)	4
2	Only online	29 (6.01)	2	21 (5.56)	4	50 (5.80)	2
3	Audio	17 (3.52)	4	11 (2.89)	5	28 (3.24)	5
4	Visual	23 (4.77)	3	18 (4.74)	3	103 (4.75)	3
5	All modes of access	397 (82.36)	1	317 (83.42)	1	714 (82.83)	1
	Total	482	-	380	-	862	-
	Chi square test value	2.857587	-	4.597314	-	-	-
	df	4	-	4	-	-	-

Fig. 4.7 : Preferred Mode of Access



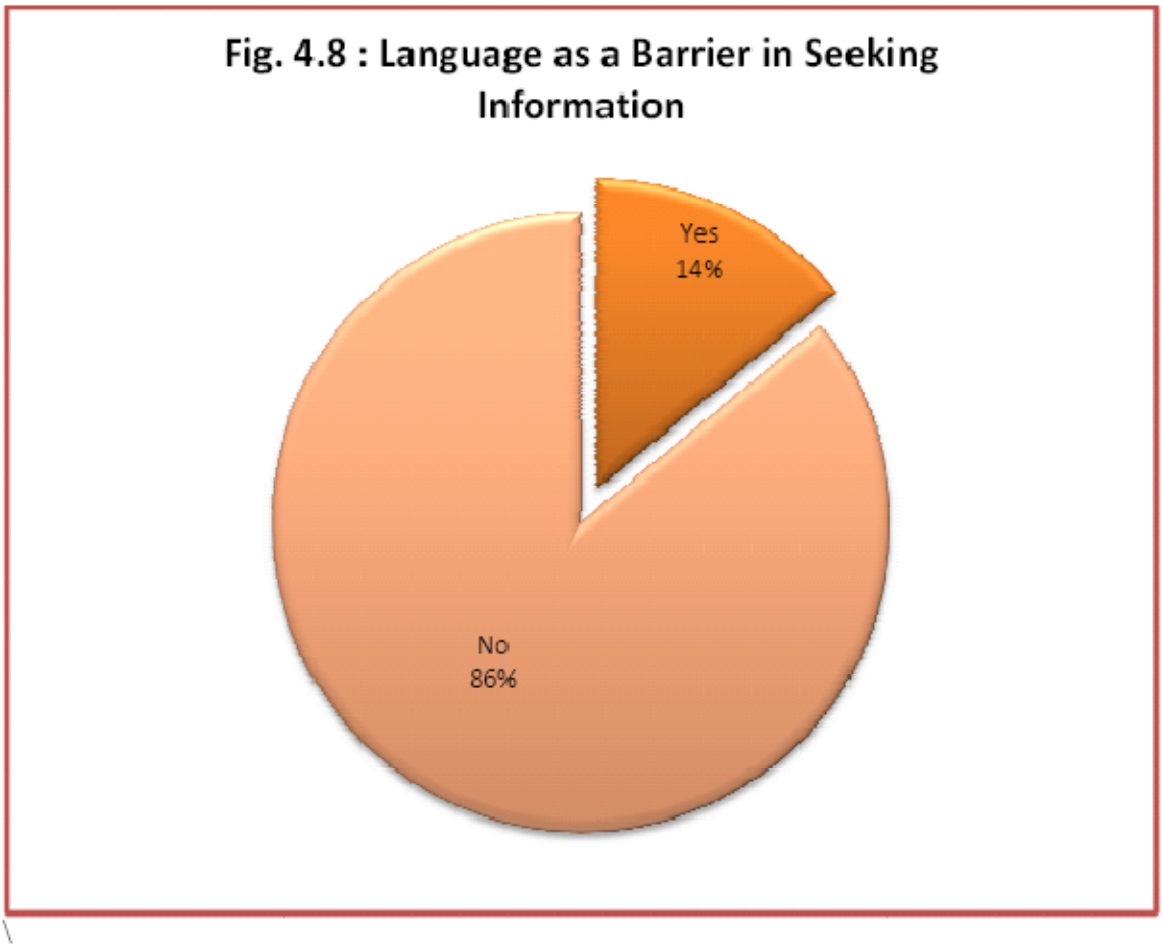
The correlation coefficient is also calculated between the surveys of Kota and Udaipur region and it is found 0.97102 which means that the mode of access pattern is almost similar in both the region. Independently calculated Chi square test value for both the region with respect to the combined region with 4 degrees of freedom indicates the same pattern of mode of access. These values are 2.857587 for Kota and 4.597314 for Udaipur region respectively for 4 degrees of freedom which is lower than the table value with 95% of significance. It shows that the variation of these variables is insignificant in the opinion individual regions.

4.6.6 Language as a Barrier in Seeking Information

Regarding the language to access the resources it is not a barrier in both the region (Table 4.11 and Fig. 4.8). Overall 85.96% respondents are of the opinion that language is not an issue in seeking information. When response yes (language as barrier) is analyzed then this figure is much higher (20.26%) in Udaipur region compare to Kota region (9.2%) or joint response (14.04%). It is thus reflected that 20.26% users in Udaipur region are not having strong English language knowledge to take advantage of the audio and visual mode of access available online. Their potential to understand the available resources in English is also poor. This may be due to their educational and family background being Hindi or mother tongue oriented. Hindi is preferred language for communication compared to the English language in their case. Calculated correlation coefficient is between the data of both regions is 1 which indicates that pattern is exactly same in both the region.

Table 4.11 : Language as a Barrier in Seeking Information

S.No	Statement↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	44 (9.2)	77 (20.26)	121 (14.04)
2	No	438 (90.8)	303 (79.74)	741 (85.96)
	Total	**482**	**380**	**862**



4.6.7 Visiting Behaviour to Library Driven by

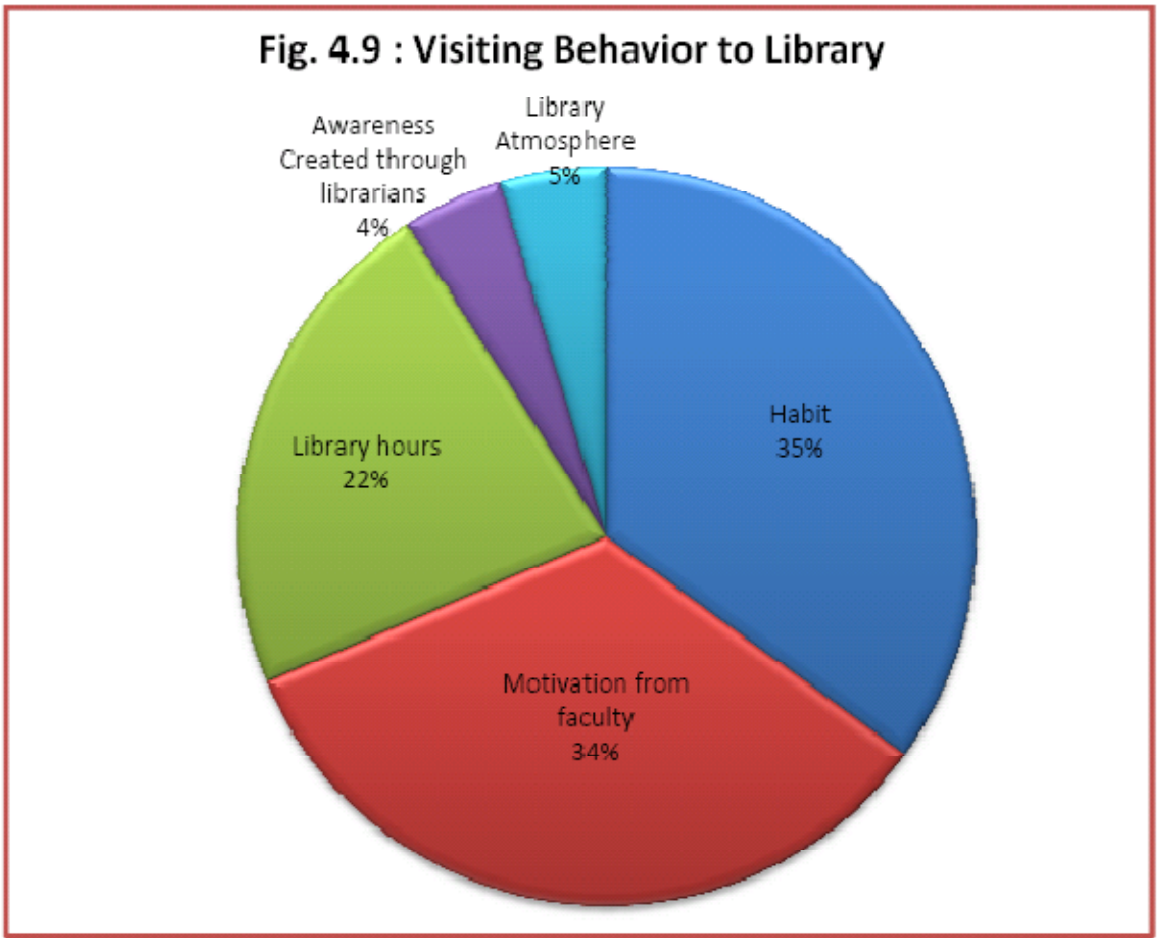
Most of the stakeholder visit the library for some or other reasons to get the information, so to judge the driving force behind the visit is analyzed (Table 4.12). Overall the habit of individual stimulates a person to visit the library (overall 35.03%) but in Udaipur region the visit is influenced by the motivation from the faculty.

Library hours also affect the behaviour of overall respondents (22.39%) imparting more affect in Kota region (31.20%). This is because of the fact that library opens in the office hours or as per the institution schedule. There is no special privilege to the hostlers even. Library atmosphere also affect the visiting mood of the students/faculty. They prefer to visit the library if they feel comfortable in terms of infrastructure / services provided. The role of library staff / librarian is the least influencing factor (Fig. 4.9)

Table 4.12 : Visiting Behaviour to Library Driven by

S.No	Driving Force↓	Kota		Udaipur		Combined	
		Response (%)	Rank	Response (%)	Rank	Response (%)	Rank
1	Habit	191 (39.72)	1	111 (29.10)	2	302 (35.03)	1
2	Motivation from faculty	97 (20.10)	3	192 (50.60)	1	289 (33.53)	2
3	Library hours	150 (31.20)	2	43 (11.40)	3	193 (22.39)	3
4	Awareness Created through librarians	19 (3.85)	5	19 (4.90)	4	38 (4.41)	5
5	Library Atmosphere	25 (5.13)	4	15 (4.00)	5	40 (4.64)	4
	Total	**482**		**380**		**862**	

Fig. 4.9 : Visiting Behavior to Library



The correlation and chi-square values were also calculated. The correlation coefficient 0.453114 indicates that the response has significantly different trend in both the regions. The same is reflected by the chi-square values which are calculated as 9.59654 for Kota region and 15.2312 for the Udaipur region with 4 degrees of freedom which are higher than the table value 9.49. That implies that the variation of variables is more in Udaipur region compared to Kota region (which is much closer to the combined trend).

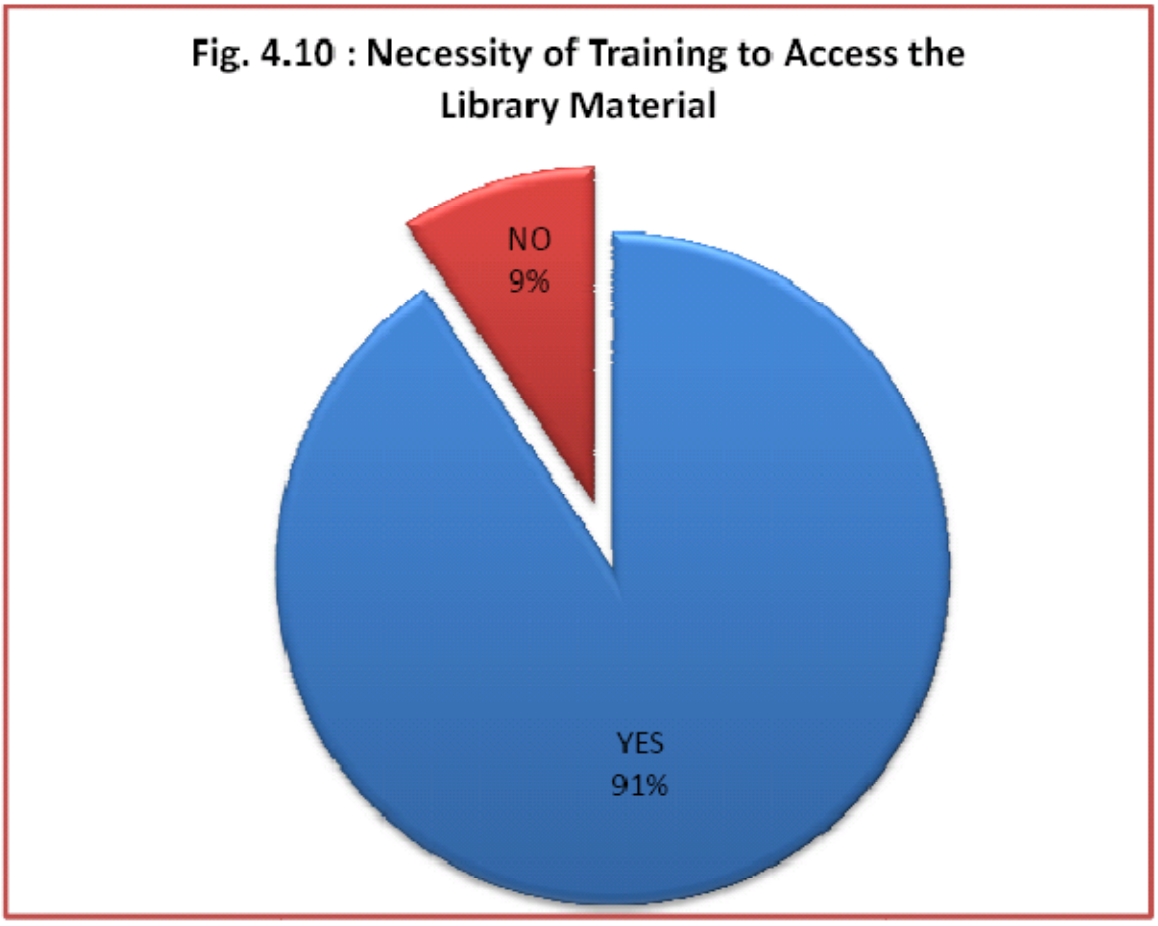
4.6.8 Necessity of Training for Accessing the Library Materials

Now-a-day's libraries are equipped with all the modern facilities. Cataloguing and computerization is being done in most of the libraries. So the training is very much essential for the users to use the available modern facilities.

Table 4.13 : Training is Essential for Accessing the Library Materials

S.No	Statement↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	426 (88.42)	355 (93.42)	781 (90.6)
2	No	56 (11.58)	25 (6.58)	81 (9.4)
	Total	**482**	**380**	**862**

From Table 4.13 it is clearly reflected that 90.6% of the surveyed population think that training is essential to access the library materials and available facilities. This response is higher in Udaipur region (93.42%) compared to Kota region (88.42%) (Fig. 4.10). The correlation coefficient is 1 between the data of Kota and Udaipur regions, which implies that trend is same in both the regions.



4.6.9 Visit of Library for Various Purposes

The various purposes and periodicity of visit to library is analysed based on the opinion of respondents. Attribute are assigned to daily, weekly, fortnightly, monthly, quarterly and not at all with attribute value starting from 6 to 1 in decreasing order (Table 4.14). Most of the respondents (58% in Kota and 42.37% in Udaipur region) visit the library fortnightly to borrow the books. The reason behind this fact that most of the libraries issue books for 15 days except the books issued from book bank (the facility available in most of the colleges). To access periodicals, the trend is similar in both the regions (41.23% in Kota and 37.63% in Udaipur). Most of the respondents visit the library weekly. But the trend is different in accessing the reference resource. Many of the Kota region students visit daily and those of Udaipur region visit weekly. This is because of the fact that, in Kota region, the research is prevailed in M.Tech. /Ph.D. and faculty members who visit the library to collect the advanced study material or for use of online resources.

Table 4.14 : Visit of Library for Various Purposes

S.No.	Purpose to library visit ↓	Kota Region Response (%)						Udaipur Region Response (%)					
		Daily	Weekly	Fortnightly	Monthly	quarterly	Not at all	Daily	Weekly	Fortnightly	Monthly	Quarterly	Not at all
1	Borrowing Books	3 (0.65)	79 (16.41)	280 (58)	98 (20.35)	10 (2.19)	12 (2.4)	22 (5.79)	75 (19.74)	161 (42.37)	48 (12.63)	55 (14.5)	25 (6.6)
2	Access Periodicals	65 (13.4)	199 (41.23)	104 (21.67)	57 (11.9)	18 (3.7)	39 (8.1)	41 (10.79)	143 (37.63)	47 (12.37)	69 (18.16)	63 (16.6)	10 (2.6)
3	Access Reference resource	237 (49.23)	123 (25.61)	71 (14.6)	38 (7.91)	13 (2.59)	0 (0)	64 (16.84)	131 (34.47)	31 (8.16)	81 (21.32)	78 (20.5)	10 (2.6)
4	Project / Thesis/ Reports	36 (7.56)	79 (16.43)	152 (31.52)	121 (25.1)	34 (6.9)	60 (12)	12 (3.16)	65 (17.11)	44 (11.58)	77 (20.26)	41 (10.8)	141 (37)
5	Read News Paper	282 (58.55)	102 (21.21)	54 (11.25)	19 (3.99)	0 (0)	25 (5.1)	199 (52.37)	79 (20.79)	61 (16.05)	12 (3.16)	0 (0)	29 (7.6)
6	Access Online resource	54 (11.2)	13 (0.92)	94 (19.5)	38 (7.88)	192 (39.8)	61 (13)	76 (20)	49 (12.89)	44 (11.58)	23 (6.05)	12 (3.16)	258 (68)
7	Access CDs /VCDs / DVDs	47 (9.75)	36 (7.47)	57 (11.83)	102 (21.16)	125 (25.9)	115 (24)	43 (11.32)	77 (20.26)	97 (25.53)	113 (29.74)	41 (10.8)	9 (2.4)
	Total	**724**	**661**	**812**	**473**	**392**	**312**	**457**	**619**	**485**	**423**	**290**	**482**
	Attribute Value	6	5	4	3	2	1	6	5	4	3	2	1

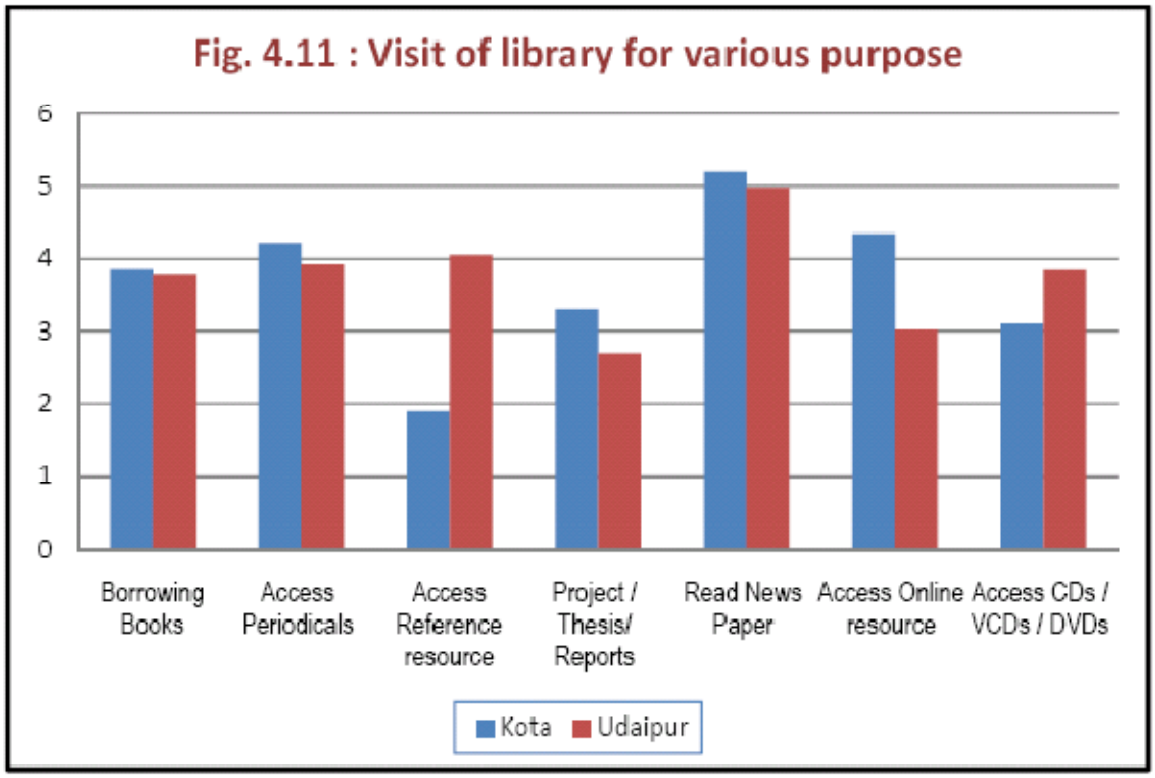


Table 4.15 : Statistical Analysis for Kota Region

S.No	Purpose to Library Visit ↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Borrowing Books	482	1	6	3.8565	4	4	0.19466	5
2	Access Periodicals	482	1	6	4.2215	4	5	0.20474	4
3	Access Reference resource	482	1	6	5.1058	5	6	0.26155	2
4	Project / Thesis/ Reports	482	1	6	3.2973	3	4	0.19208	6
5	Read News Paper	482	1	6	5.1954	5	6	0.26877	1
6	Access Online resource	482	1	6	4.3444	4	5	0.23856	3
7	Access CDs / VCDs / DVDs	482	1	6	3.0975	2	2	0.16339	7

Table 4.16 : Statistical Analysis for Udaipur Region

S.No	Purpose to Library Visit ↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Borrowing Books	380	1	6	3.7789	4	4	0.20792	5
2	Access Periodicals	380	1	6	3.9237	5	5	0.20879	3
3	Access Reference resource	380	1	6	4.0579	4	5	0.22576	2
4	Project / Thesis/ Reports	380	1	6	2.7026	2	1	0.23684	7
5	Read News Paper	380	1	6	4.9947	5	6	0.27211	1
6	Access Online resource	380	1	6	3.0158	2	1	0.2472	6
7	Access CDs / VCDs / DVDs	380	1	6	3.8447	3	3	0.21893	4

To write project thesis or reports the respondents from Kota prefer to visit fortnightly (31.52%) but there is no preference of days in Udaipur region. Reading of News Paper is the only habit for which users visit the library almost daily. No preferred pattern of visit in the library is seen in terms of access online resources.

This may be due to the fact that in most of the college the Post Graduate / Research Scholars/ faculty members are provided the individual user id and passwords to access the online resources like N-List/ DELNET or INFLIBNET. These resources can be accessed from any place or from home. Some of the resource material is available in CD/DVD/VCD and these are also accessed regularly wherever available. Visit of the library is only need based with no specific accessing pattern in both the study regions. If the analysis is done in other way, then more daily visit is seen in Kota region and weekly visit in Udaipur region. The second rank is given for fortnightly visit in both the region. It is evident from the Table 4.14 that library is mostly visited for reading newspapers followed by Access Reference Resources.

The last priority is given to Access CDs / VCDs / DVDs by the Kota respondent but Project / Thesis/ Reports writing work is on last priority by the

Udaipur students. This result also reflects that research is not prevailed in Udaipur region.

4.6.10 Time Spent in Getting Information from Different Sources

The analysis attempts to know the opinion of the users on the quantum of time spent in getting information from various sources at library in a week (Table 4.17). It shows that majority of the respondents from Kota (81.74%) spend up to 5 hours per week in libraries for reading news papers which is followed by accessing CDs/VCDs/DVDs (77.84%), and closely followed by the two aspects viz Reading Text Books (61.23%) and collecting information from Back Volumes (61.2%).Significant time (upto 10 hrs per week) is also devoted by 50.23% respondents of the region for reading the reference resources. Online resources are also having sufficient consideration (more than 10 hrs per week) by 45.23 % of respondents of Kota region.

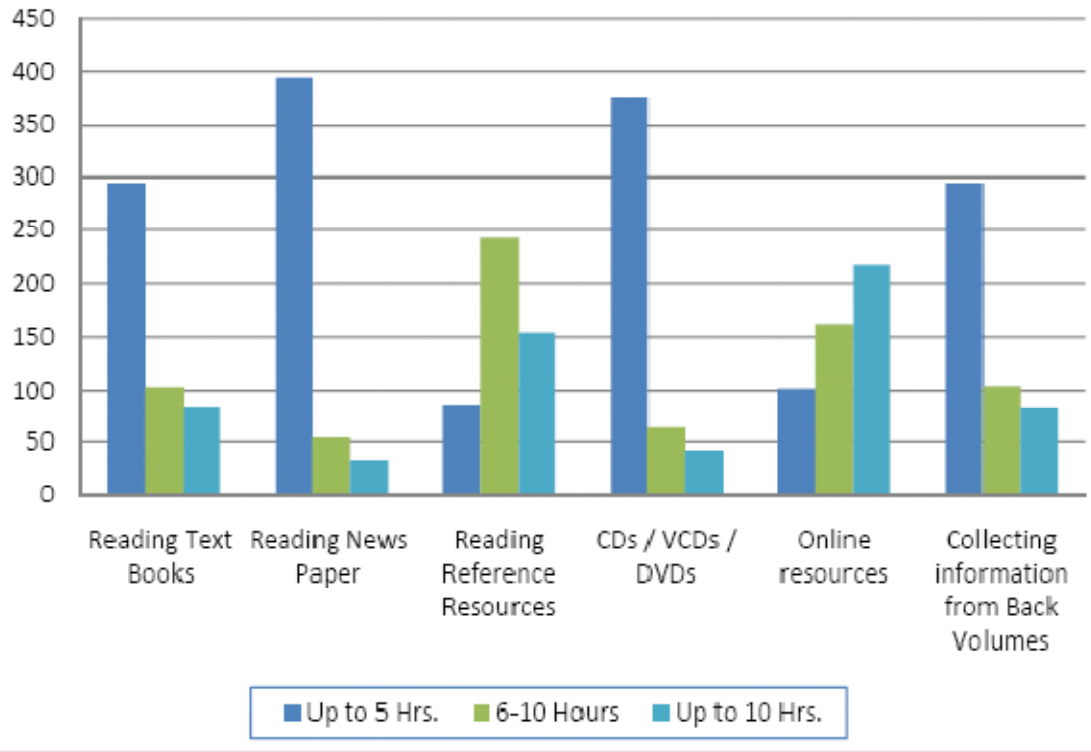
Table 4.17 : Time Spent in Getting Information from Different Sources

Sl.N	Source of Information ↓	Kota Region Response (%)			Udaipur Region Response (%)		
		Up to 5 Hrs.	6-10 Hours	More than 10 Hrs.	Up to 5 Hrs.	6-10 Hours	Up to 10 Hrs.
1	Reading Text Books	295 (61.23)	103 (21.24)	84 (17.53)	89 (23.4)	227 (59.8)	64 (16.8)
2	Reading News Paper	394 (81.74)	54 (11.21)	34 (7.05)	271 (71.24)	56 (14.86)	53 (13.9)
3	Reading Reference Resources	86 (17.82)	242 (50.23)	154 (31.95)	88 (23.1)	187 (49.3)	105 (27.6)
4	CDs / VCDs / DVDs	375 (77.84)	64 (13.23)	43 (8.93)	217 (57)	151 (39.78)	12 (3.22)
5	Online Resources	102 (21.23)	162 (33.54)	218 (45.23)	122 (32.11)	178 (46.90)	80 (20.99)
6	Collecting Information from Back Volumes	295 (61.2)	104 (21.5)	83 (17.3)	195 (51.3)	167 (44)	18 (4.7)
	Total	**1547**	**729**	**616**	**982**	**966**	**332**
	Attribute Value	1	2	3	1	2	3

The same trend is followed in Udaipur region. 71.24% of the respondents spend up to 5 hours per week in libraries for reading news papers which is followed by accessing CDs/VCDs/DVDs (57%), closely followed by the two aspects viz collecting information from back volumes (51.3%) and Online resources (32.11%).

Significant time (upto 10 hrs per week) is also devoted by 59.8% respondents of the region for reading the text books. Reading reference resources also have sufficient consideration (more than 10 hrs per week) by 49.3 % of respondents of Udaipur region. The analysis clearly indicates that reading news paper is the common aspect in whole region for which the respondents almost visit library daily and spent upto 5 hrs daily.

Fig. 4.12 : Time Spent in Getting Information from Different Sources : Kota Region



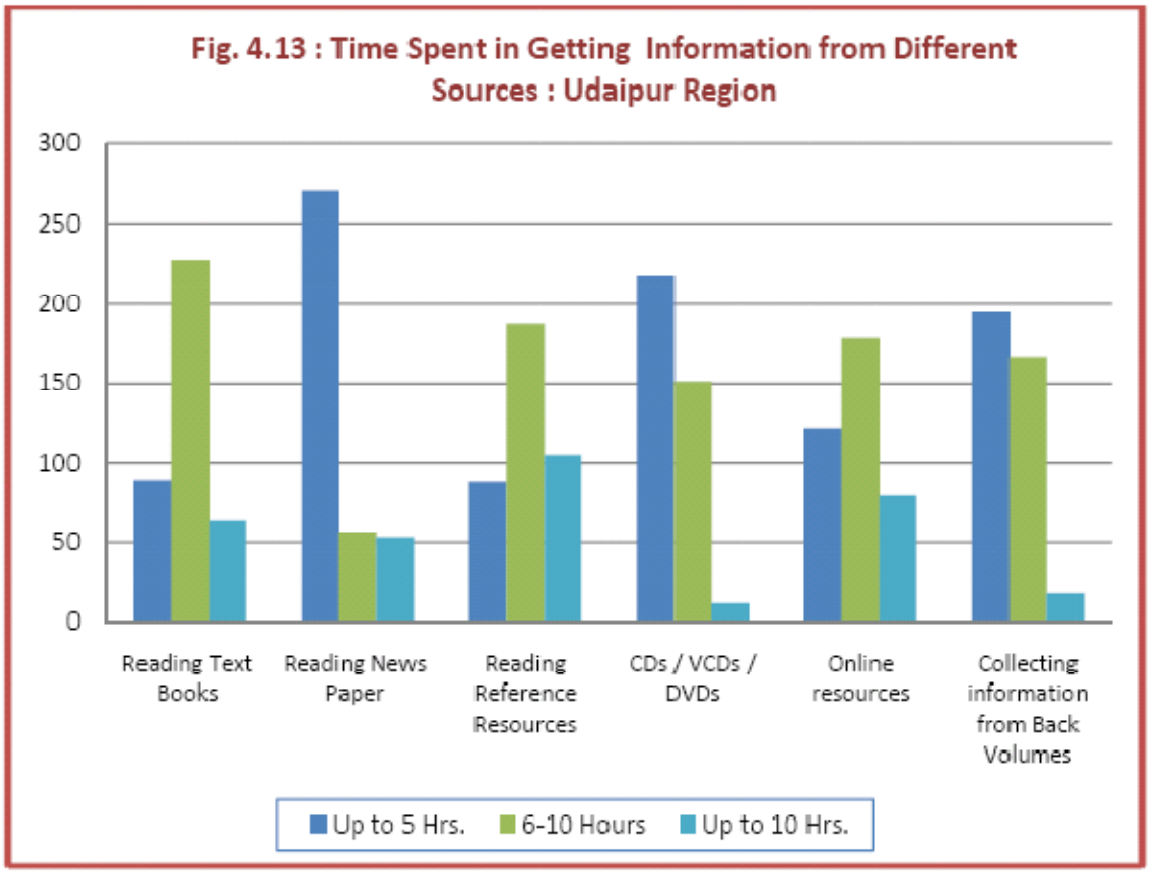


Table 4.18 : Statistical Analysis for Kota region

S.No.	Source of Information/ statistical parameters↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Reading Text Books	482	1	3	2.4377	2	3	0.07309	4
2	Reading News Paper	482	1	3	2.8469	3	3	0.0873	1
3	Reading Reference Resources	482	1	3	1.8589	2	2	0.06537	5
4	CDs / VCDs / DVDs	482	1	3	2.6888	2	3	0.08428	2
5	Online resources	482	1	3	1.7593	1	1	0.06716	6
6	Collecting information from Back Volumes	482	1	3	2.4398	2	3	0.07317	3

Statistical analysis of Kota region indicates that reading news paper is the main concern to visit the library followed by the access of CD/VCD/DVD and then collecting information from Back Volumes.

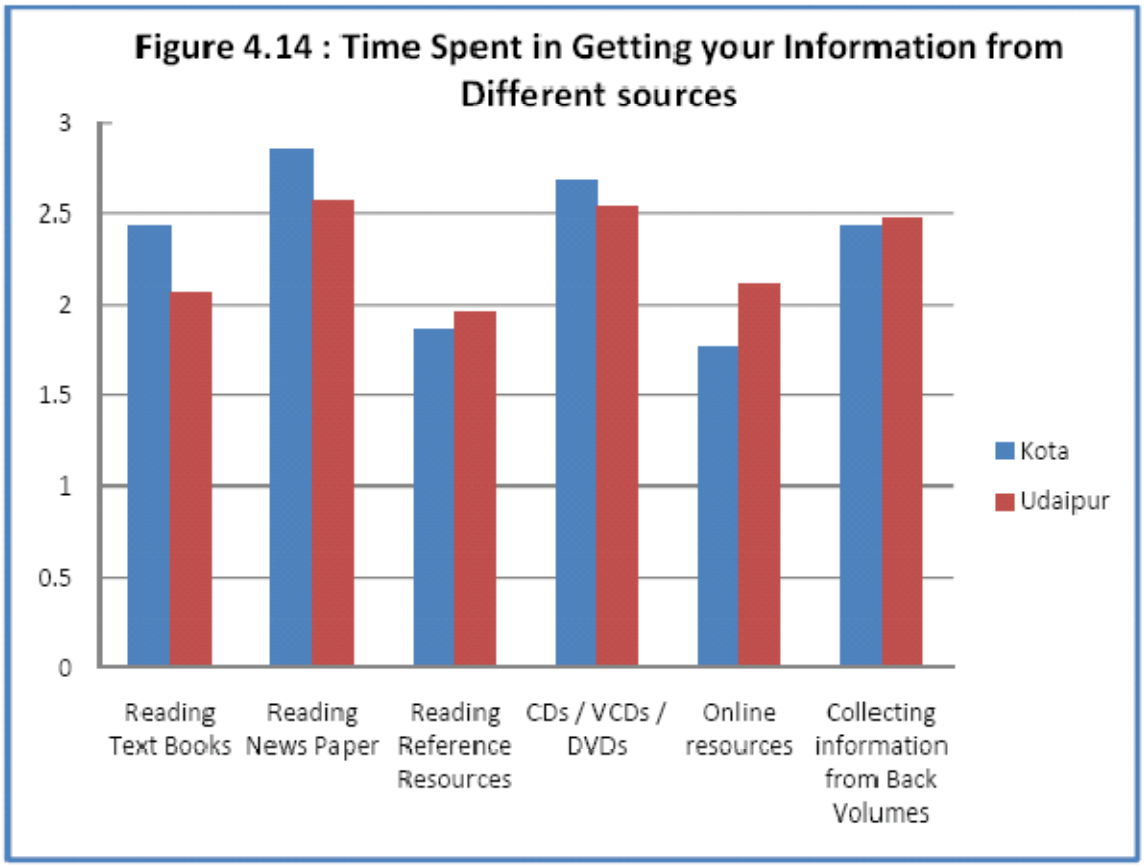


Table 4.19 : Statistical Analysis for Udaipur Region

S.No.	Source of Information/ statistical parameters↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Reading Text Books	380	1	3	2.0658	3	2	0.07278	5
2	Reading News Paper	380	1	3	2.5737	3	3	0.08866	1
3	Reading Reference Resources	380	1	3	1.9552	2	2	0.07266	6
4	CDs / VCDs / DVDs	380	1	3	2.5395	2	3	0.08695	2
5	Online Resources	380	1	3	2.1105	2	2	0.06716	4
6	Collecting information from Back Volumes	482	1	3	2.4658	2	3	0.08352	3

The same pattern is reflected in Udaipur region also. Reading text books is given the fourth priority by the Kota region respondents whereas access of online resources is on fourth priority in the Udaipur region.

The reason is that there is more technological advancement in Kota region specially in Rajasthan Technical University. Reading reference resources is on fifth priority in Kota region whereas it is last priority in Udaipur region.

4.6.11 Convenient Time to Seek Information at Library

The convenient timings to seek information at libraries are analysed based on the opinion of students from both the regions. The convenient timings are ranked after calculating the mean, mode, median and standard deviation.

Library hours to access information from library are highly convenient for Kota region respondents (61.4% visits) as more research scholars and faculty members live in the city (not hostlers) and they remain in office/ institution in library hours but slightly convenient for Udaipur region population (Table 4.20)

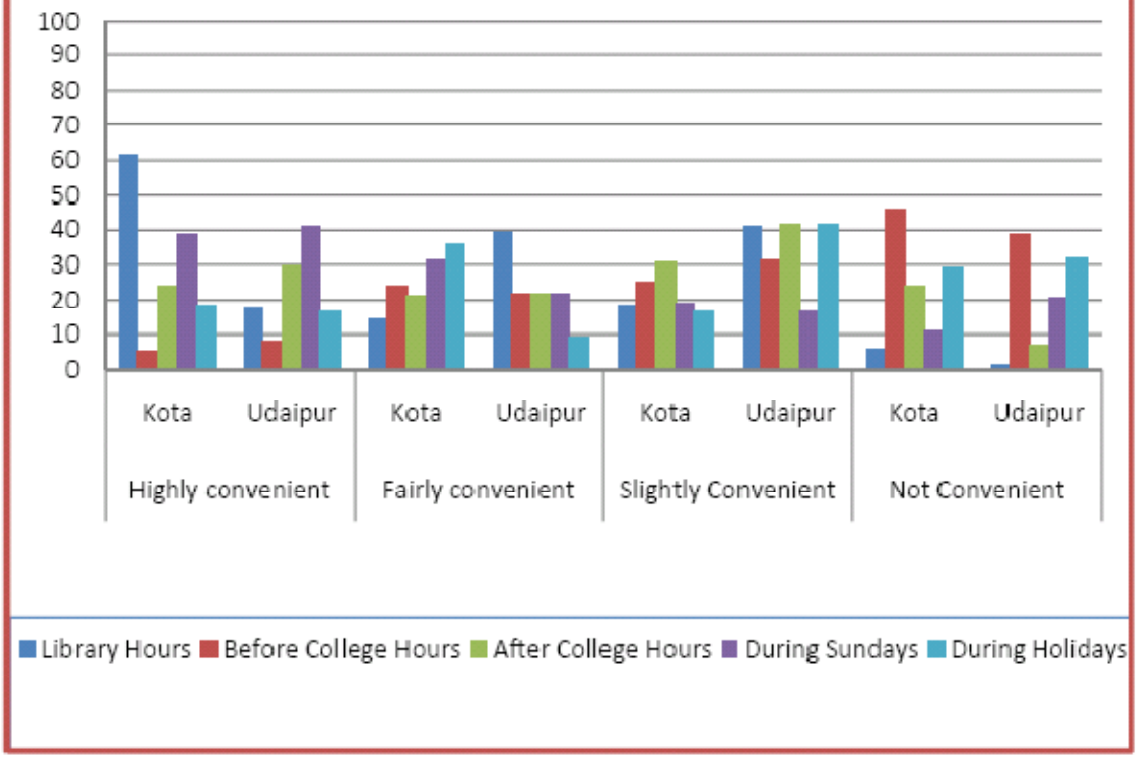
Table 4.20: Convenient time to seek information at the library

S.No.	Convenient Time↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Highly Convenient	Fairly Convenient	Slightly Convenient	Not Convenient	Highly Convenient	Fairly Convenient	Slightly Convenient	Not Convenient
1	Library Hours	296 (61.4)	70 (14.6)	88 (18.3)	27 (5.7)	68 (18)	150 (39.56)	157 (41.25)	5 (1.19)
2	Before College Hours	25 (5.22)	115 (23.76)	120 (24.9)	222 (46.12)	30 (8)	83 (21.87)	120 (31.65)	146 (38.5)
3	After College Hours	116 (24.1)	102 (21.16)	148 (30.8)	115 (23.94)	112 (29.41)	82 (21.6)	159 (41.84)	27 (7.15)
4	During Sundays	186 (38.5)	152 (31.47)	93 (19.23)	52 (10.8)	157 (41.21)	82 (21.6)	64 (16.8)	77 (20.39)
5	During Holidays	88 (18.22)	175 (36.24)	79 (16.4)	140 (29.14)	63 (16.7)	37 (9.5)	159 (41.88)	121 (31.92)
	Total	**711**	**614**	**528**	**556**	**430**	**434**	**659**	**376**
	Attribute Value	4	3	2	1	4	3	2	1

Holidays and Sundays are more convenient for Udaipur region respondents as most of the hostlers constitute the sample of population and they remain free on

Sunday. Although after college hours is the preferred choice of many Kota respondent but most of the users desired to go library on holidays and Sundays. These users do not prefer to go library before college hours.

Fig. 4.15 : Convinient Time to Seek Information in Library



Statistical analysis of Kota region also shows library hours are the most influencing factor to visit the library and it is highly convenient in some institute and fairly convenient in rest of the institutes (attribute value mean 3.3576). Sundays are the next preferred choice of the respondents to visit the library and they feel fairly convenient on visiting (attribute value mean 2.9751). Third priority is given to the after college hours.

The respondents visit the library after college hours to deal with the problems faced in the classes/ tutorials/ assignment/ problems. They remain fairly or slightly convenient in this period of time on visiting the library (attribute value mean 2.4553). During holidays the respondents feel fairly or slightly convenient (attribute value mean 2.4377) and given the fourth priority to visit the library. Before college

hour library visit is given the least priority and users do not feel convenient or feel slightly convenient (attribute value mean 1.8817) to visit library before college hours.

Table 4.21 : Statistical Analysis for Kota region

S.No.	Convenient Hours↓	N	Min	Max	Mean	Median	Mode	St.Dev	Rank
1	Library Hours	481	1	4	3.3576	4	4	0.1285	1
2	Before College Hours	482	1	4	1.8817	1	1	0.11639	5
3	After College Hours	481	1	4	2.4553	2	2	0.10204	3
4	During Sundays	482	1	4	2.9751	3	4	0.11066	2
5	During Holidays	482	1	4	2.4377	2	3	0.10201	4

This is because of the reason that no student wants to go in library before college hours which usually start at 8AM and they prefer to directly go to classes rather than other places including library. Exactly the same trend is followed in the institutions of Udaipur region with slightly different attribute values for each aspect.

Table 4.22 : Statistical Analysis for Udaipur region

S.No.	Convenient Hours↓	N	Min	Max	Mean	Median	Mode	St.Dev	Rank
1	Library Hours	380	1	4	2.8394	2	2	0.11731	1
2	Before College Hours	380	1	4	1.9921	1	1	0.12616	5
3	After College Hours	380	1	4	2.7342	2	2	0.1172	3
4	During Sundays	380	1	4	2.7394	3	4	0.11988	2
5	During Holidays	380	1	4	2.1105	2	2	0.27211	4

4.6.12 Preferred Source for Academic / General Purpose

The preference of sources for academic /general purpose is analyzed based on the opinion of respondents from the point of view of location of the institutions where the respondent belongs and course of study. Mean, Mode, Median and standard deviation are calculated. The preference of sources is ranked according to mean of the attribute value. Table 4.23 shows the type of sources, students prefer for

information related to their academic as well as general purposes. Books are the most preferred source for respondents (54.13% in Kota region and 64.12% in Udaipur Region) for getting information related to academic and general purposes. This is followed by newspapers (41.08%) in Kota region. Journal and Magazine is also a source which the respondent prefers in both the region. This source is highly preferred by 38.3% respondents in Kota and 41.61% from Udaipur region. As a significant number of post graduate and faculty members are included in respondents which are usually busy with project / thesis or research work. This fact is also reflected in the survey. Back volumes and project and thesis are highly or fairly preferred in both the region.

Table 4.23: Sources Preferred for Academic / General Purpose

S.No	Information Source↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Highly Preferred	Fairly Preferred	Rarely Preferred	Not at all	Highly Preferred	Fairly Preferred	Rarely Preferred	Not at all
1	Books	261 (54.13)	131 (27.2)	62 (12.8)	27 (5.7)	244 (64.12)	94 (24.82)	42 (11.1)	0 (0)
2	Journal /Magazine	185 (38.3)	118 (24.47)	140 (29.06)	39 (8.17)	158 (41.61)	74 (19.54)	93 (24.6)	54 (14.25)
3	News Paper	198 (41.08)	152 (31.54)	82 (17)	50 (10.38)	68 (18)	92 (24.2)	121 (31.87)	99 (25.93)
4	Back Volume	101 (21)	86 (17.89)	179 (37.04)	116 (24.07)	120 (31.47)	112 (29.5)	75 (19.7)	73 (19.33)
5	Project and Thesis	70 (14.6)	157 (32.5)	136 (28.18)	119 (24.72)	74 (19.51)	94 (24.69)	149 (39.11)	63 (16.69)
	Total	**815**	**644**	**599**	**351**	**664**	**466**	**480**	**289**
	Attribute Value	4	3	2	1	4	3	2	1

Statistical analysis was also performed with the survey of both the region. In both the regions books are highly preferable or somewhat fairly preferable source for seeking overall information with attribute mean 3.3015 and 3.5316 respectively for Kota and Udaipur region. But the second priority of both the regions is different.

Table 4.24 : Statistical Analysis for Kota region

S.No.	Information Source ↓	N	Min	Max	Mean	Median	Mode	St.Dev	Rank
1	Books	481	1	4	3.3015	3	4	0.12545	1
2	Jour./Meg	482	1	4	2.9315	3	4	0.10917	3
3	News Paper	481	1	4	3.0333	3	4	0.11284	2
4	back Volume	482	1	4	2.3569	2	2	0.10268	5
5	Project and Thesis	482	1	4	2.3693	2	3	0.10201	4

Respondents from Kota whenever visit the library read the news papers on second priority. News papers are again highly or preferable source of getting day to day information with attribute value mean 3.0333. This result is slightly surprising that engineering people also prefer to go through the newspapers like humanities or social science students. But the second priority in Udaipur region is given to access the Journal and Magazines with attribute value mean 2.8665 although the mode is 4. The journal and magazines is fairly preferred to get the information which means that Udaipur respondents are more focused compared to Kota region.

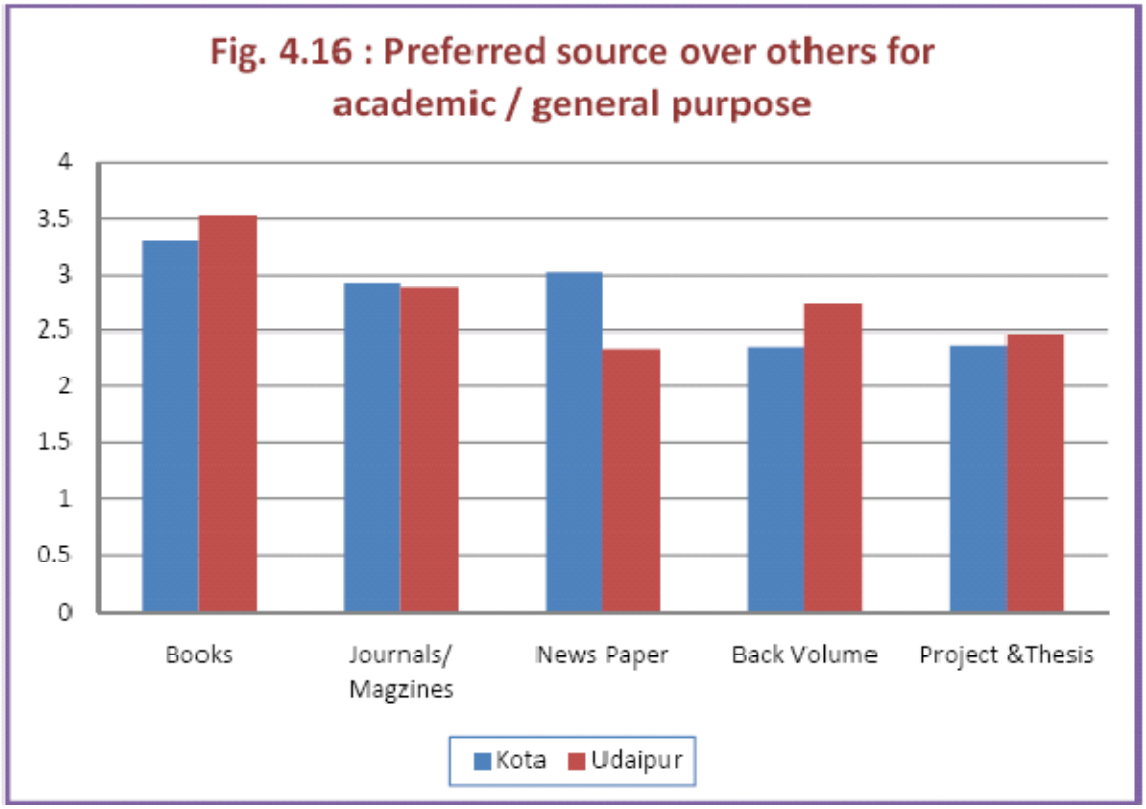


Table 4.25 : Statistical Analysis for Udaipur region

S.No.	Information Source ↓	N	Min	Max	Mean	Median	Mode	St.Dev	Rank
1	Books	380	1	4	3.5316	3	4	0.15608	1
2	Jour./Meg	380	1	4	2.8865	3	4	0.12153	2
3	News Paper	380	1	4	2.3395	2	2	0.11588	5
4	back Volume	380	1	4	2.7342	3	4	0.1172	3
5	Project and Thesis	380	1	4	2.4711	2	2	0.27211	4

Third priority in Kota is given to Journal / Magazines with attribute value mean 2.9315 indicating these are fairly preferable source of information in library. Whereas the access of back volumes are on third priority in Udaipur region with attribute value mean 2.7342 which means these are fairly or normally preferable mode for getting information.

4.6.13 Opinion on Library Collection

The respondent's views on library collections are analyzed for both Kota and Udaipur region institutions. Mean mode, median and standard deviation are calculated and the sources are ranked according to mean value of the attribute.

Table 4.26 elaborates respondent's views on the sufficiency of resources available in libraries. It shows that in Kota region more number of respondents feel online resources (41%) and newspapers (38.11%) are highly sufficient compared to books (21.5%) followed by journals / magazines (19.21%), and back volumes (19.4%) . However, insufficiency is felt with respect to Project/ thesis (55.79%) and CDs/VCDs/ DVDs (54.75%) followed by back volumes (23.12%) and online resources (18.19%). The trend is not exactly followed in Udaipur region. Respondents of this region feels that newspapers (39.74%) and Books (31.7%) are highly sufficient compared to Journal/ magazine (21.4%) followed by online resources (21.11%) and back volumes (18.32%). However, insufficiency is felt with respect to Project/ thesis (60.53%) and back volumes (59.6%) followed by CDs/VCDs/ DVDs (27.26%) and Journals / Magazine (18.13%).

Table 4.26 : Opinion on Library Collection

S.No	Source↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Highly Sufficient	Sufficient	Slightly Sufficient	In Sufficient	Highly Sufficient	Sufficient	Slightly Sufficient	In Sufficient
1	Books	104 (21.5)	185 (38.44)	126 (26.06)	67 (14)	120 (31.7)	141 (37)	84 (22.1)	35 (9.2)
2	Journals / Magazine	95 (19.81)	195 (40.41)	87 (17.98)	105 (21.8)	81 (21.4)	156 (41.06)	74 (19.41)	69 (18.13)
3	News Paper	184 (38.11)	133 (27.6)	85 (17.6)	80 (16.69)	151 (39.74)	93 (24.44)	82 (21.65)	54 (14.17)
4	Project / Thesis/	20 (4.12)	73 (15.19)	120 (24.9)	269 (55.79)	37 (9.7)	43 (11.42)	70 (18.35)	230 (60.53)
5	Back Volumes	94 (19.4)	134 (27.71)	143 (29.77)	111 (23.12)	70 (18.32)	28 (7.48)	55 (14.6)	226 (59.6)
6	CDs / VCDs / DVDs	44 (9.14)	104 (21.61)	70 (14.5)	264 (54.75)	56 (14.62)	79 (20.86)	142 (37.26)	104 (27.26)
7	Online Resources	198 (41)	102 (21.15)	95 (19.66)	88 (18.19)	80 (21.11)	76 (19.88)	165 (43.52)	59 (15.49)
	Total	**739**	**926**	**726**	**984**	**595**	**616**	**672**	**777**
	Attribute Value	4	3	2	1	4	3	2	1

It is evident from the results that news papers are sufficiently subscribed in the libraries of both the regions but the collection of project and thesis reports are highly insufficient. Because of the Government norms or norms of affiliation the subscription of books are also sufficient in the libraries. The statistical analysis of Kota region respondents indicates that newspapers are in the category of sufficiently available with attribute value mean as 2.8734 , although the mode is 4 (highly sufficient) followed by the availability of the online resources with attribute value mean 2.8489. Still the users require more online resources in all libraries

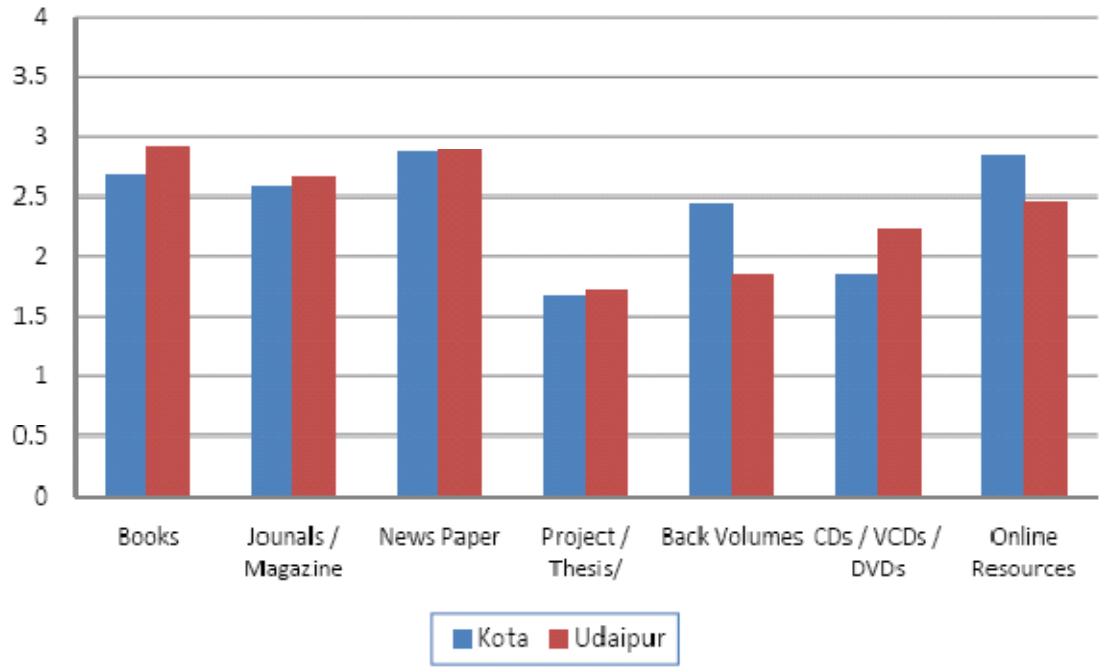
Table 4.27: Statistical Analysis for Kota region

S.No.	Source↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Books	482	1	4	2.6764	3	3	0.10311	3
2	Journals / Magazine	482	1	4	2.5809	3	3	0.10917	4
3	News Paper	482	1	4	2.8734	3	4	0.10738	1
4	Project / Thesis/	482	1	4	1.6764	1	1	0.12650	7
5	Back Volumes	482	1	4	2.4377	2	2	0.10201	5

Table 4.28: Statistical analysis for Udaipur region

S.No.	Source↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Books	380	1	4	2.9105	3	3	0.1222	1
2	Journals / Magazine	380	1	4	2.6553	3	3	0.1158	3
3	News Paper	380	1	4	2.8974	3	4	0.12174	2
4	Project / Thesis	380	1	4	1.7026	1	1	0.14089	7
5	Back Volumes	380	1	4	1.8469	1	1	0.13302	6
	CDs / VCDs / DVDs	380	1	4	2.2284	2	2	0.11789	5
	Online Resources	380	1	4	2.4657	2	2	0.11476	4

Fig. 4.17 : Opinion on Library Collection



As indicated from the Table 4.27 that books are also sufficiently available in the libraries. It is also seen from the statistical analysis that Projects / thesis and CDs/VCDs/DVDs are in insufficient or slightly sufficient category with attribute mean 1.6764 and 1.8506 respectively.

But in Udaipur region books are sufficiently available in the college with attribute value mean 2.9105 followed by the availability of newspapers and Journals/Magazines (2.6553). Online Resources and CDs / VCDs / DVDs are also somewhat available not sufficiently but slightly sufficient (with attribute value mean 2.4657 and 2.2284 respectively) in most of the colleges of Udaipur region. The availability is not very good in terms of Back Volumes and Project / Thesis. These are insufficiently available in the engineering institutes of Udaipur region.

4.6.14 Rating of Library Services

The rating of the library services offered is analysed based on the opinion of respondents from the point of views of location of the institution where they study and their course of study. Mean, Mode, Median and Standard Deviation are calculated. Ranks are given according to calculated mean.

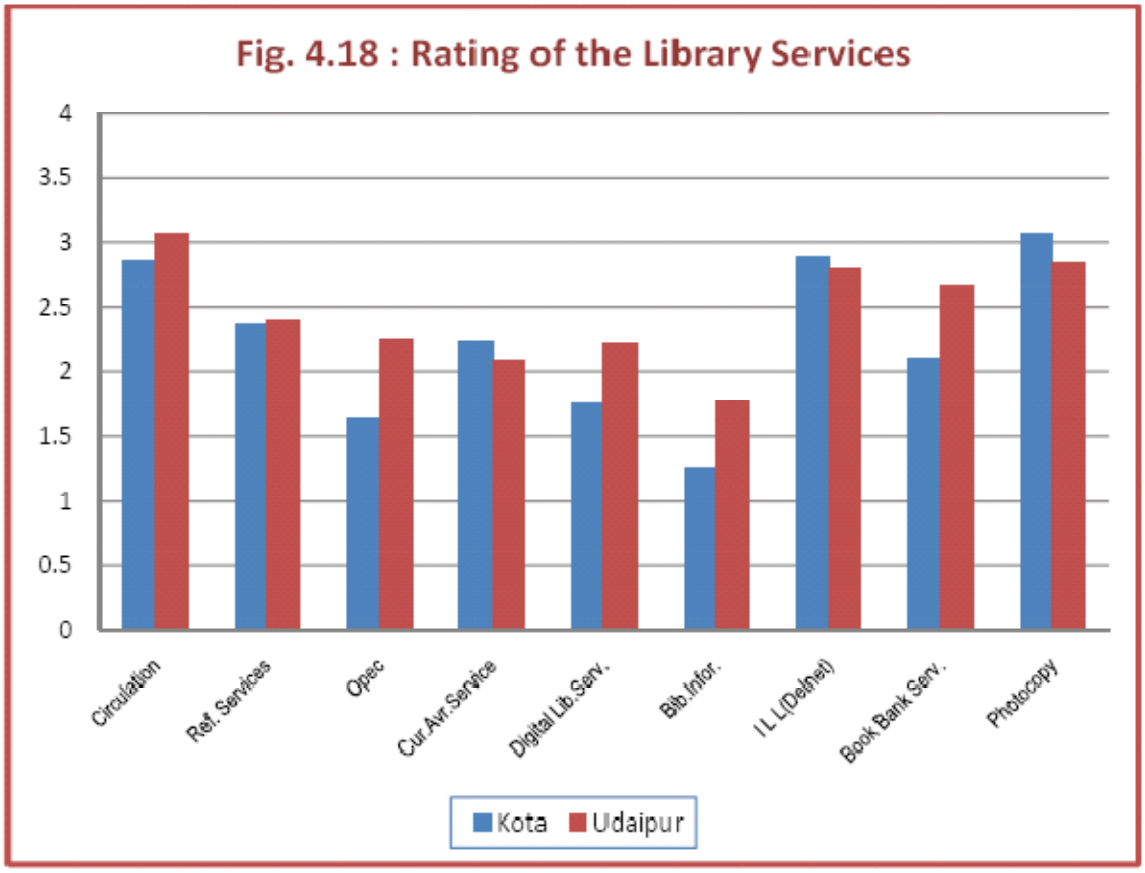
From the above Table 4.29, it is clearly reflected that the photocopy services are offered in excellent manner followed by the DELNET and circulation services in Kota region. Most of the circulation services are excellent or in good condition. Reference Services and DELNET services are either excellently served or needs improvement in some institutions. From the survey it is also clear that conditions of some online services are not good and needs improvement in most of the institutions of Kota region. These services include OPAC, Cur. Awareness Service, Digital Lib. Serv., Bib. Information. Book bank service is fairly served in some colleges but it also need improvements in some of the institutions of Kota region. But in Udaipur the results are not the same as in Kota region. The circulation services are excellently served in most of the institutions followed by the book bank facility. Here photocopy facility is also available in good conditions but not excellent. Through a recent notification for the engineering institutions the ILL or DELNET

services are made essential for seeking the affiliation from Government and affiliating universities. So ILL/DELNET services are being served in a better manner in both the regions.

Table 4.29: Rating of the Services Offered by Library

S.No	Library Services↓	Kota Region				Udaipur Region			
		Excellent	Good	Fair	Need Improvement	Excellent	Good	Fair	Need Improvement
1	Circulation	198 (41.14)	117 (24.2)	68 (14.2)	99 (20.55)	168 (44.21)	98 (25.8)	87 (22.9)	27 (7.11)
2	Ref. Services	134 (27.87)	85 (17.7)	89 (18.4)	174 (36.05)	83 (21.84)	95 (25)	93 (24.5)	109 (28.68)
3	OPAC	43 (9)	69 (14.3)	39 (8.14)	331 (68.65)	103 (27.11)	61 (16.1)	41 (10.8)	175 (46.05)
4	CAS	88 (18.23)	136 (28.2)	53 (11)	205 (42.61)	54 (14.21)	49 (12.9)	154 (40.5)	123 (32.37)
5	Digital Lib.Serv.	44 (9.1)	58 (12.1)	117 (24.3)	263 (54.54)	41 (10.79)	98 (25.8)	139 (36.6)	102 (26.84)
6	Bib.Information	10 (2.14)	36 (7.44)	19 (3.99)	417 (86.43)	28 (7.37)	68 (17.9)	74 (19.5)	210 (55.26)
7	I L L (DELNET)	213 (44.23)	104 (21.6)	60 (12.4)	105 (21.77)	79 (20.79)	174 (45.8)	98 (25.8)	29 (7.63)
8	Book Bank Serv.	75 (15.5)	70 (14.5)	167 (34.7)	170 (35.18)	117 (30.79)	102 (26.8)	75 (19.7)	86 (22.63)
9	Photocopy	234 (48.6)	105 (21.7)	82 (17.1)	61 (12.7)	77 (20.26)	188 (49.6)	94 (24.7)	21 (5.53)
	Total	**1039**	**780**	**694**	**1825**	**750**	**933**	**855**	**882**
	Attribute Value	4	3	2	1	4	3	2	1

In Kota region some services are needed to be improved. These include OPAC, Current Awareness Service, Bibliographic Information, and Reference Services. The Book Bank Services are either offered in excellent manner in some but in some institutions needs improvement. It is also depicted from the table that to provide the Bibliographic Information services need improvement in most of the institutions of both the regions.



The statistical analyses of the results are also performed for both the regions. It is clearly indicated that photocopy services are served in much better way in Kota region with attribute values mean 3.0622 with mode value 4 yet served in excellent manner in some colleges. Second best served facility is ILL (DELNET). This facility is served in good manner in most of the colleges. The third ranking is given to the circulation services. It is also served in fair manner and at some institutions in a very good manner. In general students use this facility to issue and return the books. Reference services, Current Awareness Services and Book Bank facility are also fairly served in Kota region. But the situation is not good in case of Bibliographic Information, Online Public Access Catalogue (OPAC) and Digital Library Services. Specially the Bibliographic services needs improvement drastically followed by the OPAC. The situation in digital library services can be improved with little effects.

Table 4.30 : Statistical Analysis for Kota region

S.No.	Library Services↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Circulation	482	1	4	2.8589	3	4	0.10697	3
2	Ref. Services	482	1	4	2.3714	2	1	0.10252	4
3	OPAC	482	1	4	1.6349	1	1	0.12878	8
4	Cur Awr. Service	482	1	4	2.2219	2	1	0.10495	5
5	Digital Lib. Serv.	482	1	4	1.7573	1	1	0.12228	7
6	Bib. Information	482	1	4	1.251	1	1	0.1527	9
7	I L L (DELNET)	482	1	4	2.8817	3	4	0.1076	2
8	Book Bank Serv.	482	1	4	2.1037	2	2	0.10806	6
9	Photocopy	482	1	4	3.0622	3	4	0.114	1

In Udaipur region statistical analysis also gives the same result as received in general analysis. It is clearly indicated from the table 4.31 that circulation services (attribute value mean 3.0711) are best served in this region followed by the photocopy services (attribute value mean 2.8447) with mode value 4 for each of them.

Table 4.31: Statistical Analysis for Udaipur region

S.No.	Services↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Circulation	380	1	4	3.0711	3	4	0.1288	1
2	Ref. Services	380	1	4	2.4	2	1	0.11517	5
3	OPAC	380	1	4	2.2421	1	1	0.11772	6
4	Current Awr Service	380	1	4	2.0895	2	2	0.1222	8
5	Digital Lib. Serv.	380	1	4	2.2053	2	2	0.11863	7
6	Bib. Information	380	1	4	1.7737	1	1	0.13679	9
7	I L L(DELNET)	380	1	4	2.7974	2	3	0.1187	3
8	Book Bank Serv.	380	1	4	2.6579	3	4	0.11585	4
9	Photocopy	380	1	4	2.8447	3	3	0.12004	2

As ILL (DELNET) facility is made essential in every engineering college to get the affiliation from the authority. So this facility is also served in good manner in most of the colleges. Book bank facilities are also well served followed by the Ref. Services, OPAC, Digital Lib. Services and Currant Awareness Services. All these are at satisfactory level in the Udaipur region. Services of Bibliographic Information are the only services which really need improvement in the Udaipur region. The physical survey of the institutions showed that DELNET facility is available in the libraries but due to lack of training of students, it remains underutilised.

4.6.15 Sufficiency of Number of Books Issued to Individual

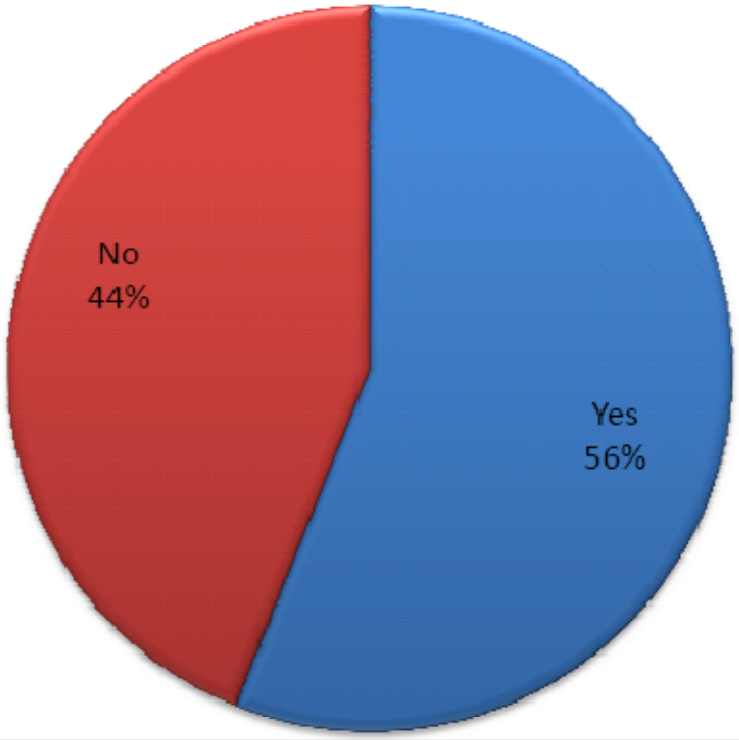
The question regarding the number of books issued to any individual was asked and the response was as per expectations. Most of the colleges have sufficient number of books according to the numbers of students admitted. Now a day's most of the engineering colleges are lacking in the admission of students. The survey indicated that 62.57% respondents receive books from the library as per their requirement and satisfaction in Kota region compared to 47.68% in Udaipur region (Table 4.32).

Table 4.32: Sufficiency of the Number of Books Issued to Individual

S. No.	Statement↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	302 (62.57)	181 (47.68)	483 (56.03)
2	No	180 (37.43)	199 (52.32)	379 (43.97)
	Total	**482**	**380**	**862**

52.32% respondents are not satisfied in Udaipur region in terms of books issued to individual compared to 37.43% in Kota region. This fact also concludes that the libraries of colleges of Kota region are more rich compared to Udaipur region colleges.

Fig. 4.19 : Sufficiencies of Books Issued from the Library



Overall response also indicates that 56% respondents are satisfied by the service of issuing the books to individuals. They are satisfied with the number of books issued to them from the library. 44% respondents of both the regions are not satisfied with the number of books issued to them. They need some improvement in this facility.

4.6.16 Services Provided by Library Staff

The opinion on the service provided by the library staff is analysed for the institutions of both the regions. Analysis is carried out using chi-square test.

Table 4.33 shows the opinion of students on the services rendered by the library staff. It is observed that majority of the students opined that library staff offer 'help on request' in Kota region. It is also observed that in 22.1% cases the library staff give oral direction instead of helping them immediately. In Kota 21.4% observed that library staff is very helpful whereas only 2.79% respondents think that library staff neglecting them when requesting them for help.

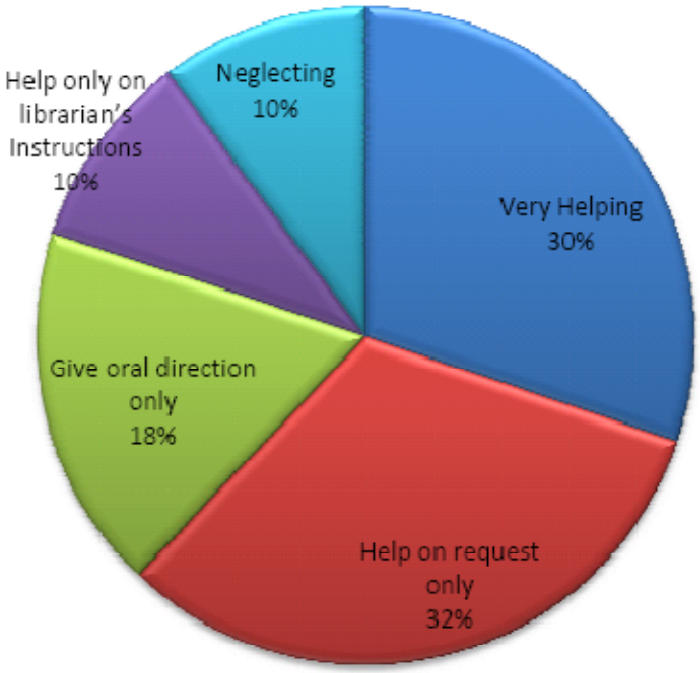
But in Udaipur region many of the stakeholders (41.3%) are of the opinion that library staff is very helpful while 21.8% think that the staff help only on request. In Udaipur a significant number (19.8%) of respondents feel that they are neglected by the library staff.

Table 4.33: Services provided by the library staff

S.No.	Attitude of library staff↓	Kota		Udaipur		Combined	
		Response (%)	Rank	Response (%)	Rank	Response (%)	Rank
1	Very Helping	103 (21.4)	3	157 (41.3)	1	260 (30.16)	2
2	Help on request only	192 (39.81)	1	83 (21.8)	2	275 (31.9)	1
3	Give oral direction only	107 (22.1)	2	48 (12.5)	4	155 (17.98)	3
4	Help only on librarian's Instructions	67 (13.9)	4	17 (4.6)	5	84 (9.74)	5
5	Neglecting	13 (2.79)	5	75 (19.8)	3	88 (10.21)	4
	Total	**482**		**380**		**862**	
	Chi square test value for 4 df	12.619		20.7029			

Overall the statement that library staff helps on request only is ranked one. 31.9% of total stakeholders think that they are helped on request followed by 30.16 % of respondents who think that library staff is very helping. More than 10% of the total population think that the library staffs neglects them when asking on help. Chi square test value is also calculated for both the region. For Kota region it is calculated as 12.619 for 4 degrees of freedom which is higher than the table value for 95% level of confidence. Similar is the case of Udaipur region where the value is 20.7029 which is also higher than the table value. These values conclude that variation of variables is significant with respect to the mean value calculated for combined response.

Fig. 4.20 : Services provided by the library staff



4.6.17 Satisfaction Level on the Arrangements and Retrieval the Library Resources

The satisfaction level on arrangement of resources and retrieval is analysed based on the opinion of respondents from the point of view of location of the institutions where the students study. Mean, mode, median and standard deviation are calculated and ranked according to the mean value.

Table 4.34 shows the satisfaction level of students on the arrangement of various resources and how easily they are retrieved. It is shown that respondents (61.62%) of Kota region are highly satisfied with the arrangement of newspapers which is followed by periodicals (23.65%). 21.58% of the population of Kota region is excellently satisfied with books and reference resources arrangements in library and their retrieval.

Table 4.34 : Satisfaction Level on the Arrangements and Retrieval the Following Resource

S No.	Services↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Excellent	Good	Fair	Need Improvement	Excellent	Good	Fair	Need Improvement
1	Books	104 (21.58)	177 (36.72)	105 (21.78)	96 (19.92)	94 (24.74)	144 (37.89)	97 (25.53)	45 (11.84)
2	Ref. Resources	104 (21.58)	168 (34.85)	91 (18.88)	119 (24.69)	54 (14.21)	94 (24.74)	167 (43.95)	65 (17.11)
3	Periodicals	114 (23.65)	201 (41.7)	84 (17.43)	83 (17.22)	69 (18.16)	108 (28.42)	124 (32.63)	79 (20.79)
4	News Papers	297 (61.62)	103 (21.37)	71 (14.73)	11 (2.28)	99 (26.05)	107 (28.16)	147 (38.68)	27 (7.11)
5	Project and Thesis	41 (8.51)	67 (13.9)	107 (22.2)	267 (55.39)	17 (4.47)	47 (12.37)	198 (52.11)	118 (31.05)
6	Ques. Bank	24 (4.98)	101 (20.95)	233 (48.34)	124 (25.73)	56 (14.74)	105 (27.63)	128 (33.68)	91 (23.95)
7	CD/VCD/	16 (3.32)	129 (26.76)	179 (37.14)	158 (32.78)	41 (10.79)	87 (22.89)	174 (45.79)	78 (20.53)
8	Online Res.	87 (18.05)	206 (42.74)	141 (29.25)	48 (9.96)	54 (14.21)	197 (51.84)	81 (21.32)	48 (12.63)
9	**Total**	**787**	**1152**	**1011**	**906**	**484**	**889**	**1116**	**551**
	Attribute Value	4	3	2	1	4	3	2	1

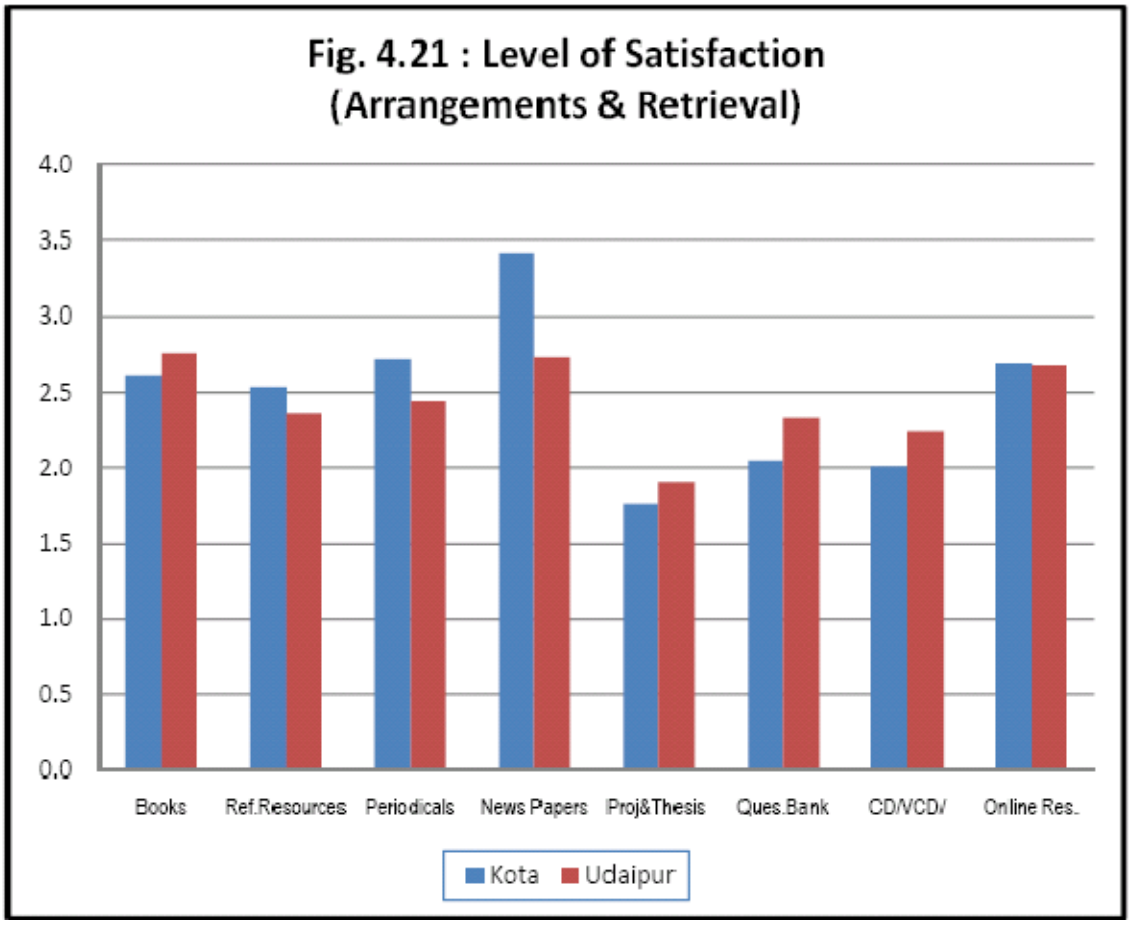
More than half (55.39%) of the stakeholders of this region are highly unsatisfied with the arrangements and retrieval of Project and Thesis and they wants the improvements in the services. More than a quarter of the population of Kota region is also not satisfied with the services of library in terms of CD/VCD, Question Banks and Reference Resources.

But the situation in Udaipur is slightly different than that of Kota region. Number of stakeholders, who responded in all the services, are very less which are satisfied excellently. Although the services of newspapers are well served in this region followed by the services for books and periodicals but majority of the populations are either fairly satisfied or unsatisfied. Like Kota region population

31.05% want improvement in services regarding project and thesis followed by the question bank and periodicals.

Table 4.35: Statistical analysis for Kota region

S.No.	Services↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Books	482	1	4	2.5996	2	3	0.10255	4
2	Ref. Resources	482	1	4	2.5332	3	3	0.10189	5
3	Periodicals	482	1	4	2.7178	3	3	0.10377	2
4	News Papers	482	1	4	3.4232	3	4	0.13209	1
5	Proj. and Thesis	482	1	4	1.7552	1	1	0.12238	8
6	Ques. Bank	482	1	4	2.0519	2	2	0.10973	6
7	CD/VCD/	482	1	4	2.0062	1	2	0.11134	7
8	Online Res.	482	1	4	2.6888	3	3	0.10329	3



Statistical analysis was also performed for both the regions. It is again reflected from the above table that the services regarding newspaper are almost in excellent condition followed by the services in periodicals, online resources, books and reference resources which are served in good manner. The services in terms of question bank, CD/VCD and project and thesis are either fairly served or need improvements. The situation is somewhat different in Udaipur region compared to Kota region. Here services regarding books are served in good manner followed by the service in newspaper and online resources. Services are also fair and good in some of the institutions regarding periodicals, reference resources, question bank and CD/VCD.

Table 4.36 : Statistical analysis for Udaipur region

S.No.	Services↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Books	380	1	4	2.7553	3	3	0.11766	1
2	Ref. Resources	380	1	4	2.3605	2	2	0.11560	5
3	Periodicals	380	1	4	2.4395	2	2	0.11488	4
4	News Papers	380	1	4	2.7316	2	2	0.11714	2
5	Projand Thesis	380	1	4	1.9026	2	2	0.13005	8
6	Ques. Bank	380	1	4	2.3316	2	2	0.11600	6
7	CD/VCD/	380	1	4	2.2395	2	2	0.11778	7
8	Online Res.	380	1	4	2.6763	3	3	0.11613	3

Here also the services regarding project and thesis arrangements and retrieval needs improvement. This is because of the fact that the copies of project and thesis are kept in different departments and hence not available in the library.

4.6.18 Favourite Journals / Magazines for Academic and General Purpose and Frequency of Referring

The frequency of access of scholarly journals is analysed based on the opinion of respondents of both the regions. Mean, Mode, Median and standard deviation and chi-square are calculated and ranks are given.

It is evident from the table 4.37 that research is not prevailed in both the regions. Majority of the stakeholders do not refer any journal. The intensive survey indicates that some journals are subscribed in the institutions either in electronic form or in hard copy and some of them are journals from the consortium of IEEE, ASME, ACM, SAE and ASCE. In Kota region most of the journals are subscribed in electronic form.

Table 4.37 : Favourite journals / magazines for academic and general purpose

S.No	Journals ↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Continuously	Frequently	Occasionally	Not at all Referring	Continuously	Frequently	Occasionally	Not at all Referring
1	IEEE	124 (25.80)	101 (21)	125 (26.00)	132 (27.40)	83 (21.80)	69 (18.20)	85 (22.4)	143 (37.6)
2	ASME	33 (6.80)	96 (19.90)	135 (28.00)	218 (45.50)	18 (4.80)	41 (10.90)	76 (20)	245 (64.5)
3	ACM	45 (9.30)	64 (13.20)	143 (30.00)	230 (47.80)	47 (12.30)	38 (9.87)	54 (14.20)	241 (63.40)
4	SAE	46 (9.60)	54 (11.20)	154 (32.00)	228 (47.40)	31 (8.03)	38 (9.87)	62 (16.30)	249 (65.5)
5	ASCE	44 (9.10)	54 (11.20)	135 (28)	249 (51.70)	34 (8.90)	37 (9.80)	63 (16.33)	247 (65.02)
Attribute Value		4	3	2	1	4	3	2	1

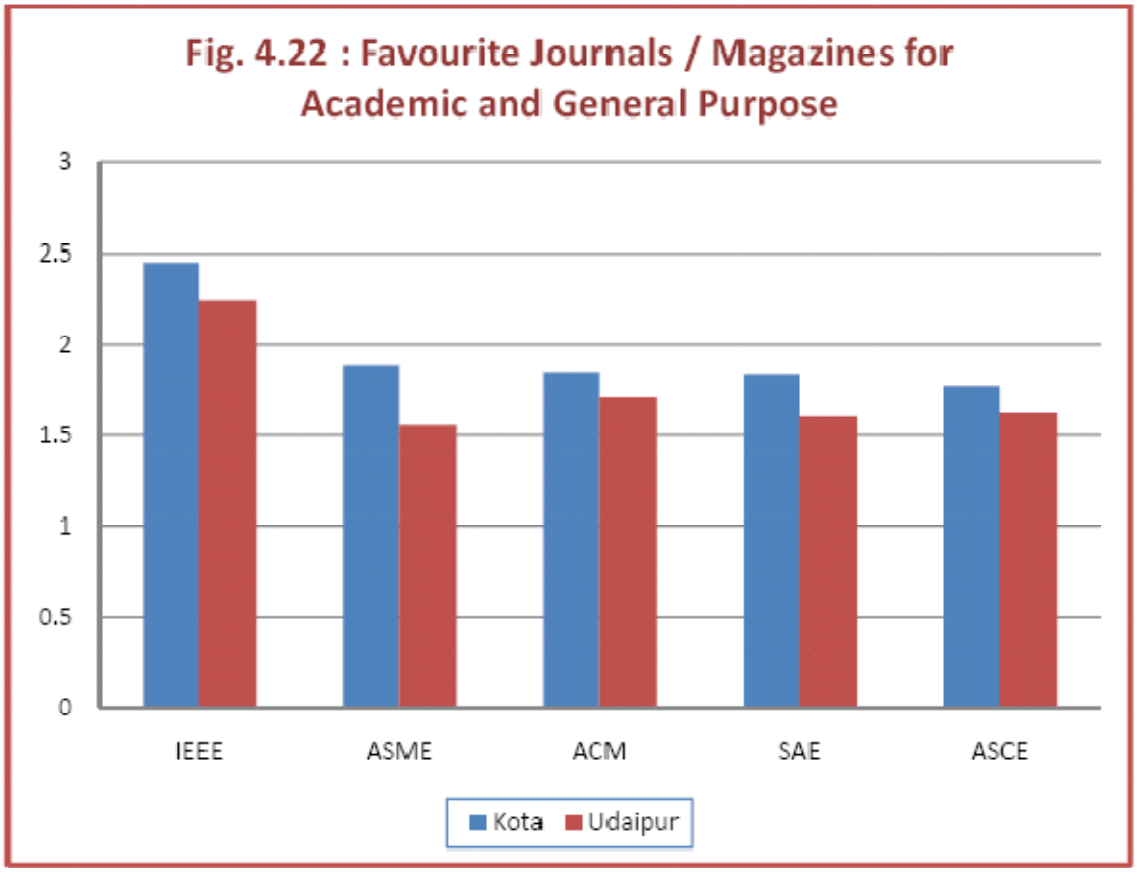
It is also reflected from the Table 4.37 that the journals of Institute of Electrical and Electronics Engineers (IEEE) is the most popular and common in Kota region and 25.80% of the population is accessing this consortium continuously and 21% accessing it frequently for their research and project/thesis purpose.

Next popular journal in this region are from the consortium of American Society of Mechanical Engineers (ASME) which are frequently used by Mechanical / Instrumentation and Civil engineering students and faculty. The uses of other journals of different groups are distributed evenly and all are occasionally searched by the population. 26% to 30% respondents use all the journals occasionally. The population, ranging from 27% to 52%, are not referring any type of journal for their study.

In Udaipur area also IEEE journals are preferred. Like Kota region 21.80% of the population continuously and 18.40% frequently use this consortium for various purposes. As Computer Science / Electronics and Electrical engineering are the core branches available in most of the colleges of this region. So the journals of Association for Computing Machinery (ACM) are next popular journals and are either continuously or frequently accessed by the students. Here in this region also population, ranging from 37% to 66%, are not referring any type of journal. The results of statistical analysis are presented in tables 4.38 and 4.39.

Table 4.38: Statistical Analysis for Kota region

S.No.	Journals↓	N	Min	Max	Mean	Median	Mode	St.Dev	Rank
1	IEEE	482	1	4	2.4502	2	1	0.101951	1
2	ASME	482	1	4	1.8838	1	1	0.10189	2
3	ACM	482	1	4	1.8423	1	1	0.118165	3
4	SAE	482	1	4	1.82987	1	1	0.118744	4
5	ASCE	482	1	4	1.778	1	1	0.12124	5



The statistical analysis of the responses also indicate that IEEE is the most popular consortium of journals with attribute value mean 2.4502 followed by the ASME with attribute value mean 1.8838. It can also be concluded that most of the other journals are either occasionally accessed or not at all referred and the least searched journals are of American Society of Civil Engineers (ASCE).

Table 4.39: Statistical analysis for Udaipur region

S.No.	Journals↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	IEEE	380	1	4	2.2421	2	1	0.11772	1
2	ASME	380	1	4	1.5579	2	1	0.15000	5
3	ACM	380	1	4	1.7131	1	1	0.14026	2
4	SAE	380	1	4	1.6079	1	1	0.14674	4
5	ASCE	380	1	4	1.6263	1	1	0.14557	3

In Udaipur region also journals of IEEE are most favourite amongst students and faculty. These have almost equal type of search (continuously, frequently and occasionally) with attribute value mean 2.2421 and model (not at all referring). Unlike Kota region here the second more popular journals are of ACM followed by ASCE and SAE.

The least searched journals in this region are from the consortium of the American Society of Mechanical Engineers (ASME) which was on second position in Kota region.

4.7 ICT USE IN LIBRARIES

4.7.1 Familiarity with the Uses of ICT Resources and Services

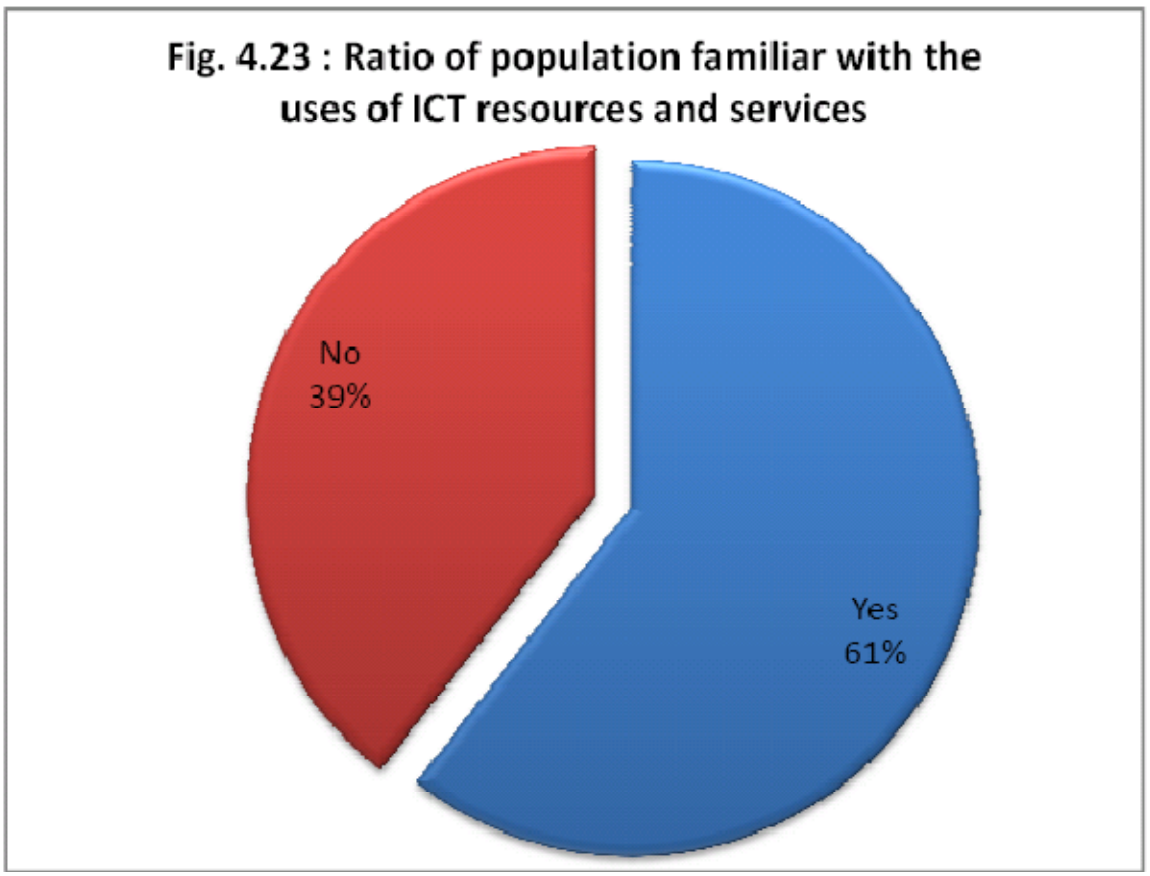
In this arena of technological advancements, the use of Information and Communication Technology is increasing in all facet of life. Educational institutions including libraries and library services are also included in this area. A question regarding the familiarity with the uses of electronic resources and services in the library was included in the questionnaire and results are depicted in Table 4.40.

Overall it is observed from the data that majority (60.56%) of the respondents are familiar with the ICT uses.

Table 4.40: Familiarity with the uses of ICT resources and services

S.No.	Statement↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	303 (62.8)	219 (57.59)	522 (60.56)
2	No	179 (37.2)	161 (42.41)	340 (39.44)
	Total	**482**	**380**	**862**

It is reflected from the responses received that the respondents from Kota region (62.8%) are more familiar with ICT then those of Udaipur region (57.59%). According to the survey (questionnaire) UG students are not much familiar with ICT resources.



4.7.2 Level of Convenience in Using Information and Communication Technology (ICT) Facilities

To judge the convenience in handling the ICT facilities a question is incorporated in the questionnaire and results are given in Table 4.41. The responses were asked in 6 categories with 4 fields/attributes. The responses are analyzed in both the region. Elementary statistical analysis is also performed by assigning the attribute values from 1 to 4.

Table 4.41: Level of convenience in using ICT facilities in library

S.No	Facilities ↓	Kota Region Response (%)				Udaipur Region Response (%)			
		Highly Convenient	Convenient	Fairly Convenient	In Convenient	Highly Convenient	Convenient	Fairly Convenient	In Convenient
1	Computers	55 (11.5)	96 (19.87)	138 (28.7)	192 (39.93)	36 (9.6)	41 (10.89)	259 (68.2)	43 (11.31)
2	e- journals	266 (55.1)	150 (31.2)	48 (10)	18 (3.7)	75 (19.7)	112 (29.46)	159 (41.9)	34 (8.94)
3	Internet	305 (63.2)	93 (19.3)	84 (17.5)	0 (0)	54 (14.2)	190 (49.9)	108 (28.55)	28 (7.35)
4	e- library	46 (9.5)	133 (27.67)	201 (41.7)	102 (21.13)	12 (3.1)	64 (17.87)	158 (41.6)	146 (38.43)
5	E-Thesis	27 (5.7)	32 (6.6)	43 (8.87)	380 (78.83)	9 (2.30	43 (11.44)	83 (21.8)	245 (64.46)
6	DELNET	104 (21.5)	184 (38.14)	105 (21.7)	90 (18.66)	88 (23.14)	166 (43.8)	120 (31.5)	6 (1.56)
	Total	**803**	**688**	**619**	**782**	**274**	**616**	**887**	**502**
	Attribute Value	4	3	2	1	4	3	2	1

In Kota region it is observed from the responses that majority of the population (63.2%) feels very comfortable in dealing with internet facility followed by the handling of e-journals (55.1%). This is because of the fact that now a day's internet becomes part of the day to day life and its use is being taught since school

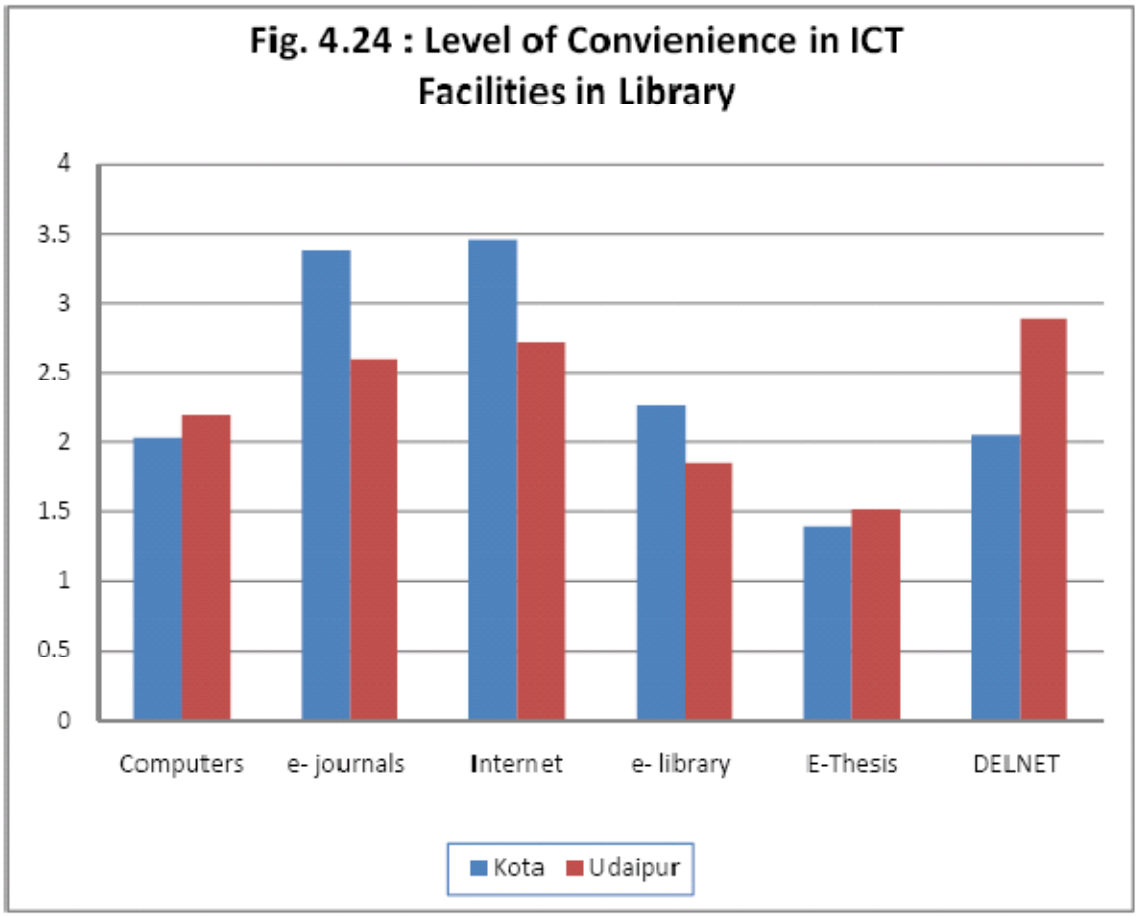
level. Almost a quarter of the population (21.5%) in this region feels highly convenient in dealing with the DELNET facilities available in almost all institutions. Few (11.5%) respondents feel convenience in experimenting with computers. It is also clearly seen from the data that students feel difficulties in dealing with the e-thesis.

In Udaipur region the respondents feel highly convenient or convenient in dealing with the DELNET facility followed by the e-journals and internet facility. The survey also indicates that they feel fairly convenient in dealing with most of the services available in the library. Majority of the stakeholders feels fairly convenience in use of computers (68.2%), e-journals (41.9%) and e-library (41.6%). A large part of the population feels inconvenience in dealing with e-thesis (64.46%) because of lack of training regarding use of these services. It is followed by the use of e-library services available in the libraries. It is observed that computers are very few in libraries but computer labs are available in the colleges with internet access. The students can access the e-resources in the labs. Because of this reason librarian are not able to guide the students.

The performed statistical analysis also indicates that in Kota region majority of the respondents are very much comfortable / highly convenient with the use of Internet (attribute value mean 3.4581 and mode 4) and e-journals (attribute value mean 3.3776 and mode value 4).

Table 4.42 : Statistical analysis for Kota region

S.No.	Facilities ↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Computers	482	1	4	2.0291	1	1	0.11063	5
2	e- journals	482	1	4	3.3776	3	4	0.12948	2
3	Internet	482	1	4	3.4581	4	4	0.13416	1
4	e- library	482	1	4	2.2552	2	3	0.10426	3
5	E-Thesis	482	1	4	1.39	1	1	0.14352	6
6	DELNET	482	1	4	2.0519	2	2	0.10973	4



Most of the population of this area also feels convenient or fairly convenient in dealing with e-libraries but they feel difficulty in e-thesis (attribute value mean 1.39 and mode value 1). This is because of the fact that most of the e-thesis are available on different portals (not on institute or university portal) like UGC etc and are available in different formats (not in required format).

For Udaipur the results are given in Table 4.43. The data analysed statistically by assigning the attribute values from 1 to 4. Respondents from this area feel very convenient in accessing the literature from DELNET (attribute value mean 2.8842 and mode value 3) followed by the Internet and e-journals. Many respondents of this area feel comfortable on working with the computers compared to Kota region (attribute value 2.1847 for Udaipur and 2.0291 for Kota region) both are in fairly convenient zone for this attribute. In Udaipur region a large population feel inconvenient in accessing the e-thesis.

Table 4.43 : Statistical analysis for Udaipur region

S.No.	Facilities ↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	Computers	380	1	4	2.1847	2	2	0.11934	4
2	e- journals	380	1	4	2.6016	2	2	0.11533	3
3	Internet	380	1	4	2.7105	3	3	0.11672	2
4	e- library	380	1	4	1.8474	2	2	0.13282	5
5	E-Thesis	380	1	4	1.5158	1	1	0.15282	6
6	DELNET	380	1	4	2.8842	3	3	0.12129	1

4.7.3 Help by Library Staff while Searching Information on the Internet/Computer

A question regarding the ICT help in library is asked by the stakeholders. Only 41.87% respondents in Kota region are in view that library staff helps any individual when help is required in terms of ICT but the majority is disappointed by the responses of library staff. Similar is the trend in Udaipur region. Where 68.4% of the respondents replied that they do not get the right help or avoided by the library staff when required. The joint response also reflects the same trend. Majority of the population (62.65%) do not get help of library staff while searching any information on the Internet/computer (Table 4.44).

Some of the identified reasons are as follows:

(i) Libraries in most of the institutions are lacking library staff.

(ii) Library staff is not properly trained in terms of Information and Communication Technology. Cataloguing is not properly done.

(iii) The available ICT equipment are installed with the old version of software. These are not being updated properly.

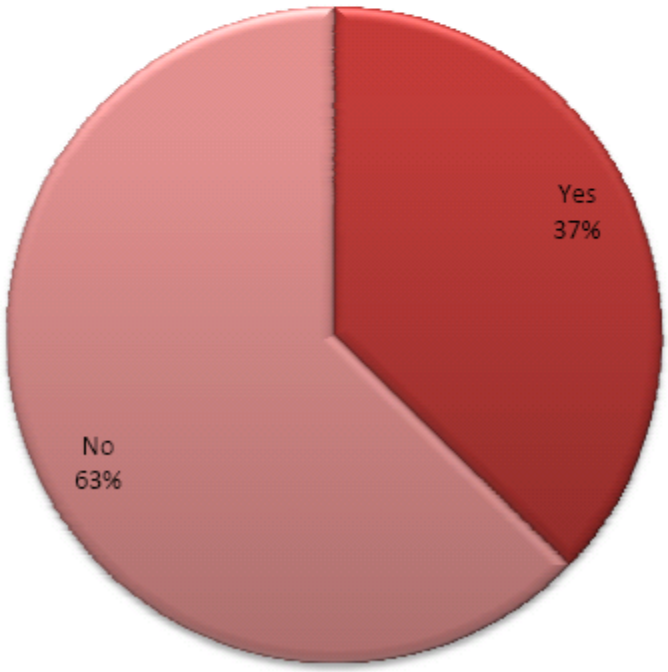
(iv) Internet /Net connectivity is not working with required / expected speed.

(v) Numbers of computers are very few in libraries but computer labs are available in the colleges with internet access. The students can access the e-resources in the labs. Because of this reason librarian are not able to guide the students.

Table 4.44: Library staff helps while searching any information

S.No.	Statement↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	202 (41.87)	120 (31.6)	322 (37.55)
2	No	280 (58.13)	260 (68.4)	540 (62.65)
	Total	**482**	**380**	**862**

Fig. 4.25 : Library staff help while searching any information on the internet/computer



4.7.4 Need of Training to Use the Digital Resources Available in the Library

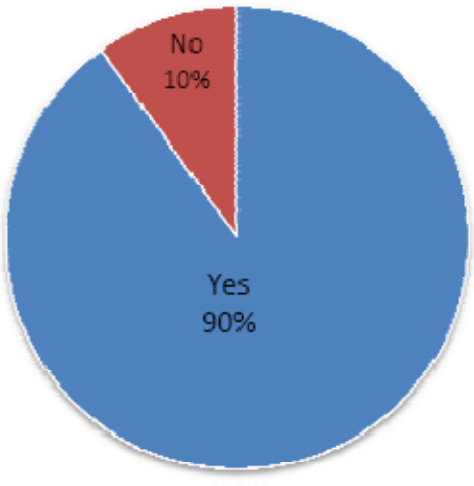
Now a day's it is made mandatory to have digital resources in the institution specially in library. The digital resources are very comfortable in use. The reference or the contents can directly be taken in the thesis report. Now it is very much essential that every user must know the handling of the available digital resources. For this purpose a proper training is necessary for all the users.

Table 4.45 : Training is Essential for Use the Digital Resources

S.No.	Statement↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Yes	420 (87.19)	356 (93.6)	776 (90.02)
2	No	62 (12.81)	24 (6.4)	86 (9.98)
	Total	**482**	**380**	**862**

A question, regarding this aspect, was placed in the questionnare and response was as expected (Table 4.45). Majority of the respondents (87.19% in Kota and 93.6% in Udaipur) are of the opinion that a proper training is very essential.

Fig. 4.26 : Training is essential to use the digital resources



Over all more than 90% of the population require a training to handle the available digital resources and the remaining population is of research scholars who said that they themselves can manage the digital resources.

4.7.5 Affect of Electronic / Modern Facilities on Information Seeking Behaviour

The opinions of respondents in using the information technology, such as their interest in using the technology, need for training, difficulties in retrieving the e-sources and their comfort level in getting the required information within right time are analyzed. Location wise analysis is carried out using chi square tests. Table 4.46 indicates that 38.52 % of respondents feel that they are comfortable in getting the information within right time using the electronic facilities. 32.25% of students specify that they are not given proper training / information in making use of the technology.

Table 4.46: Electronic / modern facilities affect information seeking behaviour

S.No.	Statement	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	I am not interested in using the technology rather than going straightaway to the resource by institution	39 (8)	12 (3.16)	51 (5.92)
2	I am not given proper training / information in making use of them	151 (31.4)	127 (33.42)	278 (32.25)
3	The retrieval of e – sources consumes much time in getting right information I need, since the search lists large number of relevant and irrelevant information	114 (23.6)	87 (22.89)	201 (23.32)
4	I feel comfortable in getting my information within right time using the e – facilities.	178 (36.95)	154 (40.53)	332 (38.52)
	Total	**482**	**380**	**862**

23.32 percent of students point out that the retrieval of e –sources consumes much time in getting right information which they need, since the search lists large number of relevant and irrelevant information. Only 5.92 percent of the respondents indicate that they are not interested in using the technology rather than going straightaway to the resource by intuition. Almost same trend is seen in both the regions. Chi square test is also performed taking the joint response as reference value. Chi square test value for Kota region is calculated as 0.89525 for 3 degrees of freedom which is much lower than the table value which shows the trend in Kota region follows the combined trend. The chi square test value for Udaipur region is 1.4420 which is also lowers the table value. So there is no variation in variables with respect to the joint results.

Fig. 4.27 : Affect of eclectronic/modern facilities

4.7.6 Commonly Used Internet Services

The usage of internet services is analyzed and the results are mentioned in Table 4.47. The statistical parameters like Mean, mode, median and standard deviation are calculated and ranked. It is evident from the Table 4.47 that most of the respondents from Kota region use the popular search engines to get the information. The search engines are being used by 83.11 % of the population either continuously or frequently. Second most used internet service is the emails to receive the information. More than 71% of the respondents are continuously or frequently using the email facility to get the information. It is also reflected from the table that Blogs and List Serve are rarely used by most of the populations.

Table 4.47 : Commonly Used Internet Services

S.No	Services↓	Kota				Udaipur			
		Continuously	Frequently	Occasionally	Rarely	Continuously	Frequently	Occasionally	Rarely
1	e-mail	104 (21.6)	239 (49.65)	87 (18)	52 (10.75)	103 (27)	180 (47.25)	65 (17)	32 (8.75)
2	Search engine	299 (61.94)	102 (21.17)	59 (12.3)	22 (4.59)	196 (51.69)	81 (21.3)	43 (11.3)	60 (15.71)
3	Blog	35 (7.21)	91 (18.98)	69 (14.22)	287 (59.59)	150 (39.5)	89 (23.5)	35 (9.2)	106 (27.8)
4	List- Serve	35 (7.26)	86 (17.87)	119 (24.64)	242 (50.23)	82 (21.6)	63 (16.6)	64 (16.9)	171 (44.9)
5	Messenger	47 (9.78)	102 (21.21)	246 (51)	87 (18.01)	52 (13.6)	82 (21.5)	74 (19.6)	172 (45.3)
	Total	**520**	**620**	**580**	**690**	**562**	**504**	**284**	**550**
	Attribute Value	4	3	2	1	4	3	2	1

It is worth mentioning here that messenger is also occasionally used (51%) by the respondents to communicate the information.

In Udaipur region also more than half of the respondents (51.69%) use the search engines to get the information followed by the blogs (39.5%). Likewise Kota region the emails are also used to get the information continuously or frequently by 74.25% of the population. It is also clearly seen from the data that messenger (45.3%) and List serve (44.9%) are least used by the population.

From the statistical analysis again it is certified that search engine are used frequently or continuously by the respondents from Kota region (mean attribute value 3.4066) followed by the emails (mean attribute value 2.8195) and the least used means to communicate the information are blogs and List serve which are rarely used. The rarely used means are used for entertainment and other purposes.

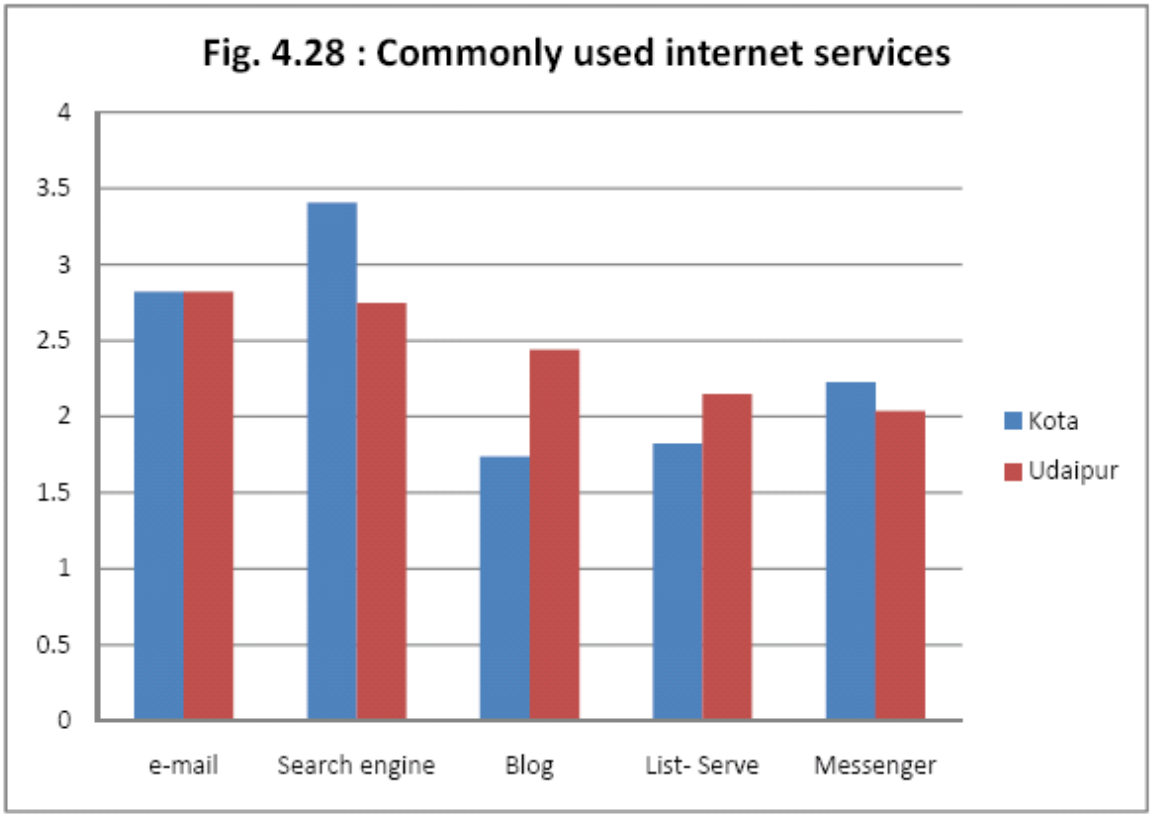
Table 4.48: Statistical analysis for Kota region

S.No	Services↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	e-mail	482	1	4	2.8195	3	3	0.10593	2
2	Search engine	482	1	4	3.4066	4	4	0.13113	1
3	Blog	482	1	4	1.7386	1	1	0.12323	5
4	List- Serve	482	1	4	1.8216	1	1	0.11913	4
5	Messenger	482	1	4	2.2261	2	2	0.10486	3

The result for Udaipur region is slightly different from the results of Kota region. Here emails (attribute value mean 2.8211 and mode value 3) are on the top priority to get the information. This also implicates that most of the respondents use the one to one means of communication. The search engines are on the second priority for getting the information.

Table 4.49 : Statistical analysis for Udaipur region

S.No	Services↓	N	Min	Max	Mean	Median	Mode	St. Dev	Rank
1	e-mail	380	1	4	2.8211	3	3	0.11934	1
2	Search engine	380	1	4	2.7447	3	4	0.11742	2
3	Blog	380	1	4	2.4395	3	4	0.12955	3
4	List- Serve	380	1	4	2.1474	1	1	0.12028	4
5	Messenger	380	1	4	2.0368	1	1	0.12416	5



These are frequently used by the respondents (mean attribute value 2.7447 and mode value 2) as this is most easily available mean on internet. Here blogs are also used occasionally or frequently and on third priority to seek the information. Some of the respondents have also created their own blogs to disseminate the information for the users. The least used mean to seek the information in this area is messenger. These are occasionally used although the mode value is 1 i.e. rarely used.

It is also identified in the survey that Google, Google Scholar are most popular search engine followed by yahoo, MSN, Ask me etc.

4.8 OPINION OF USERS

The analysis of the views of the students that affect the information seeking behaviour is carried out and the results are compiled in Table 4.50. Responses are collected location wise and analyzed. The collected data shows the views of respondents that affect their information seeking behaviour. A major portion (64.5%) of the respondents is of the opinion that Lack of e-resources in the library

and Lacking of training to make use of library technology affects the information seeking behaviour of any individual. One more issue is also identified, that the 'Non book material have to be arranged in an easily retrievable manner' as suggested, by more than 57% of the population. Reprographic facilities are very much essential to get the information from any library.

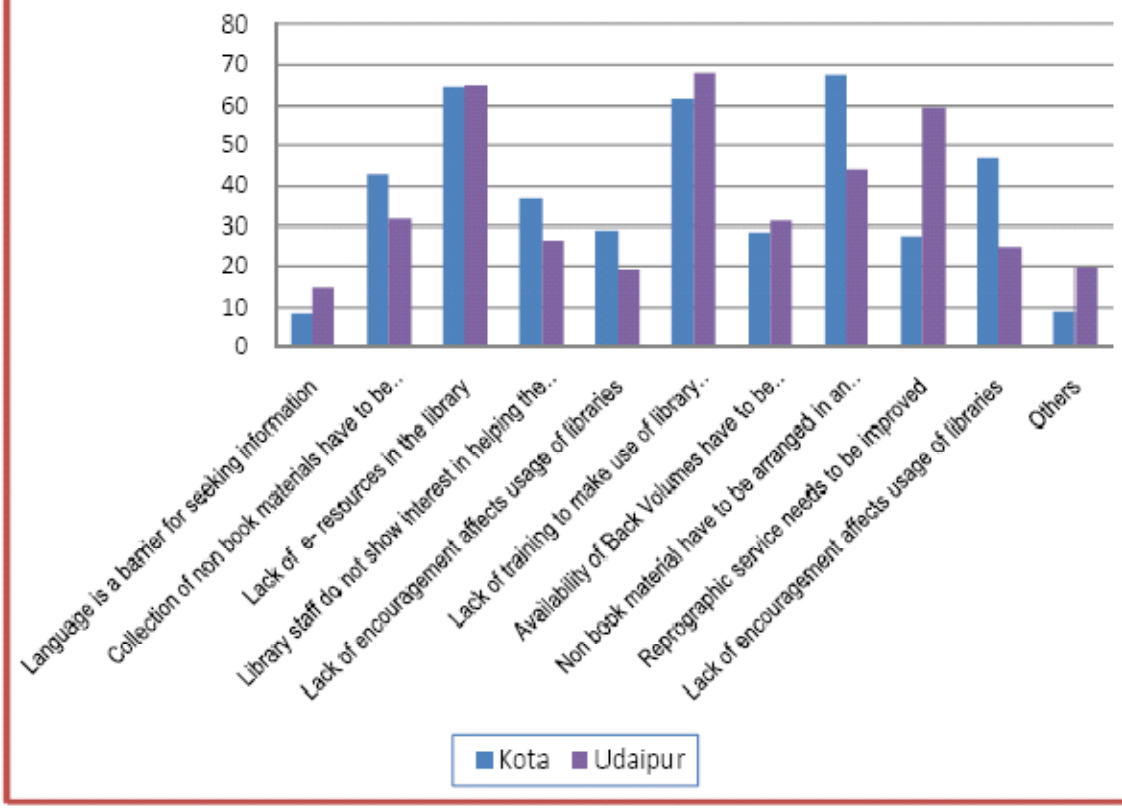
Table 4.50: Views of respondents

S.No.	Opinion ↓	Kota	Udaipur	Combined
		Response (%)	Response (%)	Response (%)
1	Language is a barrier for seeking information	41 (8.5)	55 (14.6)	96 (11.14)
2	Collection of non book materials have to be increased	207 (42.94)	121 (31.8)	328 (38.05)
3	Lack of e- resources in the library	310 (64.3)	246 (64.7)	556 (64.5)
4	Library staff do not show interest in helping the students	178 (37)	101 (26.45)	279 (32.37)
5	Lack of encouragement affects usage of libraries	140 (29)	73 (19.2)	213 (24.71)
6	Lack of training to make use of library technology affect getting required information	298 (61.87)	258 (67.97)	556 (64.5)
7	Availability of Back Volumes have to be familiarized among student	138 (28.65)	119 (31.21)	257 (29.81)
8	Non book material have to be arranged in an easily retrievable manner	325 (67.5)	168 (44.3)	493 (57.19)
9	Reprographic service needs to be improved	133 (27.6)	226 (59.6)	359 (41.65)
10	Others	43 (9)	74 (19.6)	117 (13.57)
	For 9 df Chi-Squre test value	13.449	22.009	

If this service is not properly maintained than it affects the information seeking behaviour significantly (41.65%). It is also indicated from the table that non

availability of non book materials like CD/VCDs/Audio Visual resources affects the information seeking behaviour. More than 38% of the respondents think that collection of non book materials must be increased in the libraries. It is also observed from the survey that more than a quarter of the population (32.37%) feels that the library staff do not encourage the students for frequent visit libraries through their attitude and are not helpful.

Fig. 4.29 : Views Affecting Information Seeking Behavior



It is also seen that a meagre portion of respondents (11.14%) are of the opinion that language is a barrier for seeking information.

The statistical analysis is also performed and the chi-square test value is calculated taking the combined value as the standard. The chi-square test value for Kota region respondent is 13.4496 for 10 degrees of freedom. It is compared with the table value with 95% of significance which is 18.3. The observed value is lower than the table value which implies that the trend in Kota region follows the joint

trend i.e. is no significant variation is observed. The chi-square test value is also calculated for Udaipur region is also calculated as 22.009 which is higher than the table value 18.3 which is higher that implies that the trend is not followed as observed in combined one. The variation is observed with the joint observations.

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CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

CHAPTER

5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 INTRODUCTION

The present chapter is based on the analysis of results reported in chapter 4. Findings include the summary of the result and outcomes related to various aspects of information seeking behaviour of users in engineering colleges of Kota and Udaipur divisions of Rajasthan. Suggestions are given to improve the infrastructural facilities, services for strengthening the user friendly environment of the libraries. The testing results of the hypothesis and fulfillment of objectives are briefly discussed in this chapter. The chapter also discusses the comparative conclusions for user studies in two different regions.

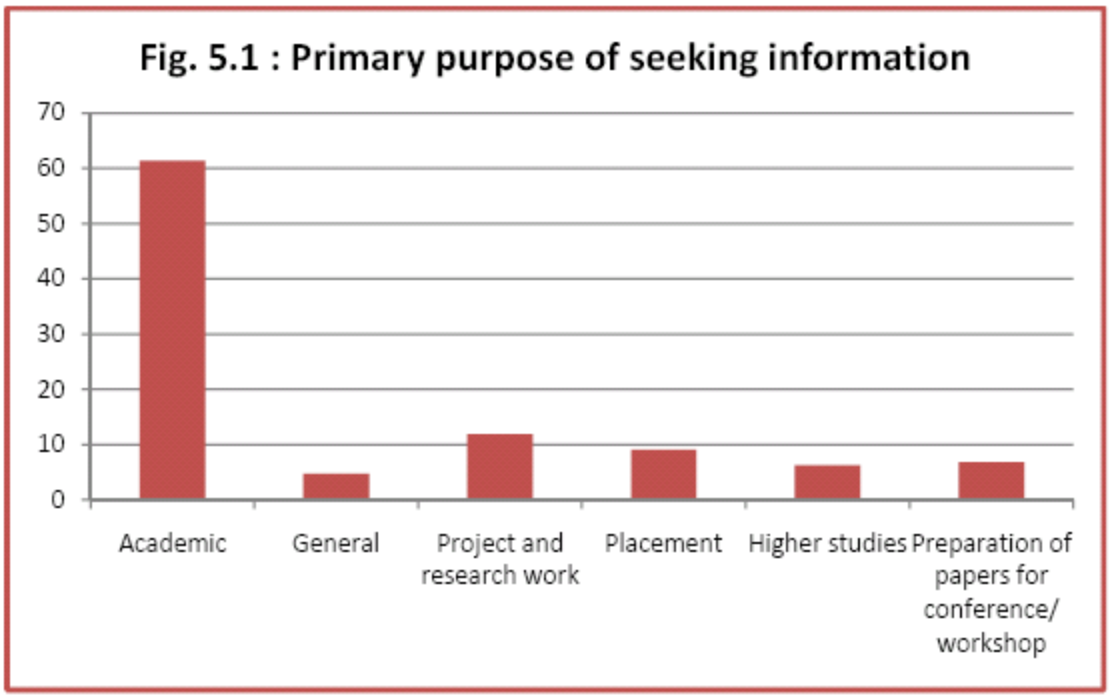
5.2 Comparative Findings of the study

5.2.1 Background Information about Respondents

- The sample size is optimum as majority of the students responded the questionnaire (Table 4.1).
- A large number of respondents are from Under Graduate courses
- Equal numbers of engineering institutions are covered under the study in both the regions (Table 4.3).
- 12 engineering institutes are identified for the study out of which 11 engineering institutions are private colleges. Students of one of the state government university i.e. the Rajasthan Technical University have significant contribution to the survey sample (Table 4.3).

5.2.2 About the Library Services

1. In the process of exploring the information needs of the users of the engineering colleges of Kota and Udaipur Division, it is observed that majority of the users visit the library for academic purpose, which is followed by the purpose of seeking literature for project and research work. The least priority is given to general purpose.



2. To know the availability and user's awareness of different types of resources in the engineering colleges of Kota and Udaipur Division the sources of information and the level of dependency by the respondents are analyzed. The primary sources are classified into library, faculty, personal contact and internet.The respondents primarily depend on internet services for their information need which is followed by library. Respondents prefer faculty and personal contacts as their penultimate and last preferred sources respectively. The trend in case of Udaipur region is slightly different. Here the faculty members influences the users specially students to visit the library and in helping the internet services. The information is also shared by the faculty members in their category and with other users also. Here internet is also one of the primary source of information.

3. **Separate reading room in library:** Most of the respondents are of the opinion that the library has the reading room. There are more respondents of Kota region in comparison to Udaipur region, who demanded a big separate reading room.

4. **Primary Purpose of use of the reading room facility in the library**: Most of the respondents use the reading room to study the reference material available in the library, which cannot be issued followed by the other purpose which includes reading of news papers, magazines, other materials and discussion with other fellow colleagues. Reading room in the library as the computing facilities are given the last priority

5. **Mode of access:** More than half of the student's population prefers all mode of access. But individually the respondents prefer the print mode with second priority in Udaipur region. Material available in visual mode is on third priority followed by online mode. To get any information the audio mode was on last priority in both the divisions.

6. **Language as a barrier in seeking information**: Majority of the respondents are of the opinion that language is not a barrier in seeking information. Calculated correlation coefficient between the data of both regions indicates that pattern is exactly same in both the region

The objective of the study was to assess the needs, information seeking behaviour, awareness utilization and library use pattern of engineering colleges in comparative context of Kota and Udaipur Division for this purpose following points are discussed with the respondents:

- ***Visiting behaviour to library driven by***: Habit is the main factor that influences the student's visiting behaviour to library but in Udaipur region more students are motivated by the faculty members to visit the library. One third of the population visit library on motivation by faculty. Citing the awareness created by library staff, very few respondents visit the library.

- ***Training is essential for accessing the library materials***: Training is very much essential for the users to use the available modern facilities in the library system. From the results, table 4.13 it is clearly reflected that most of the surveyed population thinks that training is essential to access the library materials and available facilities.

- ***Visit the library for various purposes***: A large number of the respondents visit the library fortnightly for books. To access periodicals the trend is similar in both the regions. Most of the respondents visit the library weekly for this purpose. To write project thesis or reports the respondents from Kota prefer to visit fortnightly but there is no preference of days in Udaipur region. Reading of News Paper is the only habit for which majority of the users visit the library almost daily. No preferred pattern of visit in the library is seen in terms of access online resources.

- ***Time spent in getting information from various sources at library in a week***: It is found that majority of the students use library under the category of upto 5 hours. These students spend their time in reading newspapers, accessing CDs/VCDs/DVDs and back volumes. Students who spend five to ten hours in libraries access the online resources. The collection of back volumes also takes 10 or more hours in a week in library. The analysis clearly indicates that reading news paper is the common aspect in whole region for which the respondents visit library almost daily and spent upto 5 hrs. Reading text books is given the fourth priority by the Kota region respondents whereas access of online resources is on fourth priority in the Udaipur region. Reading reference resources is on fifth priority in Kota region whereas it is last priority in Udaipur region.

- ***Convenient time to seek information at the library***: It is shown through the mean ranking that students gave first preference to library hours as highly convenient to seek information. This is followed by Sundays, after college hours, holidays and before college hours. Most of the respondents consider

library hours as convenient for them. Holidays and Sundays are more convenient for respondents of Udaipur region as most of the hostlers constitute the sample of population and they remain free on Sundays. Although after college hours are the preferred choice of Kota respondent but they more prefer holidays and Sundays as convenient choice to visit library. The users do not prefer to go library before college hours.

- ***Preferred source for academic/general purpose***: Study indicates that books are the most preferred source for respondents for getting information related to academic and general purposes. The Udaipur region respondents are more dependent on books in comparison to Kota region respondents. But the second priority is different in both the regions. Almost 41% users of both the region have different choices (news papers in Kota but Journal/Magazine in Udaipur). Results in relation to mean rankings disclose that respondents of both the regions gave first preference to books which is followed by newspapers in Kota but journals/magazines in Udaipur region. Books are the most preferred source for academic information whereas newspapers are highly preferred for general purpose. The choice on last priority is also different in both the regions. Accesses of back volumes are on last priority in Kota region whereas the news papers are on last priority in Udaipur region for Academic and general purpose.

- ***Respondent's opinion on library collection***: Respondents of Kota region consider that they are primarily satisfied on the collection of online resources and newspapers are highly sufficient compared to books followed by journals / magazines, and back volumes. However, insufficiency is felt with respect to Project/ thesis and CDs/VCDs/ DVDs followed by back volumes and online resources. But the respondents of Udaipur region feels that news papers and Books are highly sufficient compared to Journal/ magazine followed by online resources and back volumes. However, insufficiency is felt with respect to Project/ thesis and back volumes followed by CDs/VCDs/ DVDs and Journals / Magazine. It is evident from the results that news

papers are sufficiently subscribed in the libraries of both the regions but the collection of project and thesis reports are highly insufficient. Ranking on the basis of mean attribute value indicates that newspapers are highly sufficient in Kota region while Books are sufficient in Udaipur region. But the opinion of both regions coincides in case of availability of Project/thesis as these are insufficient in both the regions.

- ***Rating of services provided in the library***: The rating of the library services offered is analyzed based on the opinion of respondents. The students of Kota region rate the Photocopy services followed by the DELNET and circulation services as excellent or good compared to any other service of the library while the respondents of Udaipur region rate the circulation services as excellent. The photocopy and DELNET services are rated as good in this region. Services regarding the Bibliographic Information are highly unsatisfactory in both the regions and needs improvements so these are placed on last rank (i.e. 9th) in statistical analysis tables. But the services are different on 8th rank. These are OPAC in Kota region and Current Awareness Service in Udaipur region. These services also need improvement.

- ***Sufficiency of Number of Books issued to individual***: Regarding the number of books issued to any individual the majority of the respondents are satisfied. The survey indicated that 62.57% respondents receive books from the library as per their requirement and satisfaction in Kota region compared to 47.68% in Udaipur region. In combined responses 56% are satisfied by the service of issuing the books to individuals. 44% respondents of both the regions need to increase the number of books issued to the students.

To identify the level of satisfaction pertaining to the use of resources by the stakeholders of both the regions the following points are discussed with the respondents:

- ***Opinion on service provided by the library staff***: The opinion on the service provided by the library staff is analyzed for the institutions of both the

regions. It is observed that majority of the students opined that library staff offer 'help on request' in Kota region. In this region a quarter of the population observed that library staff is very helpful whereas negligible number of respondents think that library staff neglecting them when requesting them for help. But in Udaipur region majority of the stakeholders are of the opinion that library staff is very helpful and 21.8% think that the staff helps only on request. In Udaipur a significant number of respondents feel that they feel neglected by the library staff.

- ***Satisfaction level on arrangement of resources and retrieval*** : The ranking on the basis of mean attribute value gives an understanding that respondents give first priority for the arrangement of newspapers in the libraries which is followed by periodicals, online resources and books in Kota region. It is observed that the respondents of this region are satisfied with the arrangement of newspapers, periodicals and books. Projects/thesis, CD/VCD, availability of question banks and retrieval of the reference resources need to be arranged in an easily retrievable manner.

  Almost same trend is seen in Udaipur region also. But the respondents put most of the attribute in good or fair category. A quarter of the population put services regarding news papers and books in excellent category. More than half of the population is of the view that services of availability of, online resources are good and project and thesis are fair. Simultaneously they need improvements in the services of project and thesis and question bank arrangements.

- ***Access to scholarly journals and frequency***: With respect to access to scholarly journals IEEE journals are ranked as the first choice of frequent access in Kota region. This is followed by ASME and ACM journals.

  But in Udaipur the trend is different. Although the IEEE consortium is most popular and frequently accessed but the second choice is ACM followed by ASCE. It is found that IEEE journals are most sought after resources by the

students since it provides multidisciplinary information. It is also observed that there is an under usage of scholarly journals since two third of the total respondents are not opting these scholarly resources.

It is reflected from the survey that research is not prevailed in both the regions. Majority of the respondents does not refer any journal. The intensive survey indicates that some journals are subscribed in the institutions either in electronic form or in hard copy and some of them are journals from the consortium of IEEE, ASME, ACM, SAE and ASCE. In Kota region most of the journals are subscribed in electronic form.

5.2.3 Findings on ICT Use in Library

To analyze and evaluate the existing ICT facilities/programmers in engineering colleges of study area, following points are discussed with different users.

- ***Familiarity with the uses of ICT Resources and Services***: Familiarity with the uses of electronic resources and services in the library was analyzed. Overall it is observed from the data that majority of the respondents are familiar with the ICT uses. It is reflected from the responses received that the respondents from Kota region are more familiar with ICT then those of Udaipur region.

- ***Convenience in using Information and Communication Technology (ICT) Facilities***: Level of convenience in using Information and Communication Technology facilities, are judged. Respondents of Kota region consider the use of Internet as highly convenient whereas those of Udaipur region are comfortable with DELNET and internet both. In Kota the second priority is given to e-library followed by DELNET but in Udaipur the second priority is given to e-journals. It is also judged that respondents of both the region feels inconvenient in dealing with the E-thesis. This is because of the fact that most of the e-thesis are available on different portals (not on institute or

university portal) like UGC etc and are available in different formats (not in required format).

- ***Help by library staff while searching information on the Internet/ computer***: Two third of the population of the respondents are not comfortable with the library staff when asking for the help regarding use of ICT. Only 41.87% respondents in Kota region are in view that library staff helps any individual when help is required in terms of ICT. Similarly, only 31.6% respondents of Udaipur region are satisfied with the help given by library staff. Most of the B.Tech students are not familiar with e-resources so require help from library staff.

- ***Need of Training to use the digital resources available in the library?*** : Regarding the need of the training to use the digital resources, majority of the respondents are of the openion that a proper training is very essential. More than 90% of the population require a training to handle the available digital resources. This is essential because of the following reasons:

  1. Digital resources are available in different languages and different formats

  2. Resources are available on different portals. Sometimes the search of the right portal is very time consuming. So the users prefer to leave that source of information.

  3. Some of the resources are subscribed for academic institutions with a very nominal price whereas these are available on very high prices for an individual. So the awareness regarding these resources must be popularized or the library staff must help the users for the better use of e-resources in the library.

  4. Libraries in most of the colleges do not have a big computer lab so students access e-resources in their class room lab, where they are unable to take help from library staff.

- ***Affect of electronic / modern facilities on information seeking behaviour***: The opinions of respondents in using the information technology, such as their interest in using the technology, need for training, difficulties in retrieving the e-resources and their comfort level in getting the required information within right time are analyzed. Almost same trend is seen in both the regions. 38.52 percent of respondents feel that they are comfortable in getting their information within right time using the electronic facilities. One third of the respondents specify that they are not given proper training / information in making use of the technology and a quarter of students point out that the retrieval of e –sources consumes much time in getting right information that they need, since the search lists large number of relevant and irrelevant information. Only 6 percent of the respondents indicate that they are not interested in using the technology rather prefer to go straightaway to the print resources by intuition

- ***Commonly used Internet services***: Analysis of the survey indicates that most of the respondents from Kota region use the popular search engines to get the information followed by the emails to receive the information. Here messengers are also occasionally used by the respondents to communicate the information. In Udaipur region also more than half of the respondents use the search engines to get the information followed by the blogs. It is also clearly seen from the data that messengers and List serve are least used by the population. The result for Udaipur region is slightly different from the results of Kota region. In Udaipur region users give the top priority to get the information. This also implicates that most of the respondents use the one to one means of communication. The search engines are on the second priority for getting the information. These are frequently used by the respondents as this is most easily available mean on internet.

It is also identified in the survey that Google, Google Scholar are most popular search engine followed by yahoo, MSN, Ask me etc.

5.2.4 Opinions of Users

A major portion of the respondents are of the opinion that Lack of e-resources in the library and Lacking of training to make use of library technology affects the information seeking behaviour of any individual. One more issue is also identified, that the 'Non book materials shall also be arranged in an easily retrievable manner', by more than half of the population. One third of the respondents think that collection of non-book materials must be increased in the libraries. It is observed from the survey that more than a quarter of the population feels that the library staff do not influence the students to frequently visit libraries through their attitude and are not helpful. It is also seen that a meagre portion of respondents are of the opinion that Language is a barrier for seeking information.

5.3 EVALUATION OF HYPOTHESIS

The hypothesis that has been formulated at the beginning of the study is tested on the basis of the findings and the truth of the hypothesis is established:

1. The statistical analysis mentioned in chapter 4 indicated that the attribute value mean is between 2 and 3 in the point under 'library collection' that means that available resources are not adequate in number as per the demand of the users. Similarly, the attribute value mean, for the 'satisfaction level on arrangement of resources and retrieval', is again near 2 for almost all the resources which indicate the satisfaction level is fair but not good or excellent. Hence our hypothesis that the available resources are not adequate as per the demand or not easily accessible in engineering libraries in Rajasthan is tested with a clear cut verdict for improvement in libraries with respect to resources availability and number.

2. In most of the points mentioned in questionnaire the correlation coefficient is calculated as 1 or very near to 1, for both the divisions (Kota and Udaipur). This fact indicates that the engineering faculties and students show no significant variation in their perception of importance of information seeking behaviour in use of available ICT resources in colleges/universities and research institutes.

3. It is reflected from the survey that there is a need of trained library staff or must be training program for optimum use of library but this fact does not affect the information seeking behaviour of the stakeholders. So the hypothesis that low incidence of information seeking behaviour among stakeholders is not related to availability of adequate trained/semi/untrained Library staff in colleges proved true.

4. It is clearly reflected in response of various questions of the questionnaire that users are facing the difficulties in accessing the online resources because of various reasons like lack of knowledge, slow internet speed, no proper training etc. hence the hypothesis that Many difficulties are being faced by the engineering users while accessing and using the various types of online resources due to lack of their knowledge about search techniques is also true.

5. The hypothesis that Advancement in modern technology enriches the professional services of engineering libraries is also proved true as it is clearly reflected from the responses that most of the journal consortium are available on line. The server based access will definitely reduce the misuse of the available resources and will enhance the optimum use of library.

6. It is depicted from the results and responses of various questions that most of the engineering college libraries of Rajasthan do not have a proper information system for providing fast, efficient information services for fulfilling information requirements of faculty and students according to their needs. The term proper is here correlated with the satisfaction level of the users.

5.4 MEETING THE SET OF OBJECTIVES

The findings also have enabled the investigators to achieve the objectives of the study-

1. Majority of the students visit the library for academic purpose which is followed by the purpose of seeking literature for project and research work.

The least priority is given to general purpose. The information needs of faculty and students are identified as required.

2. All the resources and their availability in the library are identified. The opinion of users on collection of library resources like books, Journal/Magazines/Newspapers/thesis/Back volumes/ CDs, DVDs and online resources is taken and availability with user's awareness is evaluated. So the availability and user's awareness of different types of resources in the engineering colleges of study area is assessed.

3. The familiarity with the uses of electronic resources and services in the library and level of convenience in using Information and Communication Technology (ICT) Facilities is assessed. Available ICT facility like Computers, e-journals, Internet, e-library, e-thesis and DELNET are evaluated and the level of convenience in using them is assessed as per the study objective.

4. As mentioned in objectives the different practices and methods used by engineering faculties and students in retrieving information from ICT sources are identified and analyzed. It is found that Information is retrieved for different purposes like academic exams, research, project/thesis and general purpose using both offline (print) and online modes.

5. The filled questionnaires comprising the points related to information need, information seeking behaviour, awareness, utilization and library use pattern are collected from the users of 12 colleges (6 colleges each from Kota and Udaipur division). So the data is analyzed in comparative context of both the regions as stated in objectives of the thesis.

6. The stakeholders of the study are the faculty members, post graduate and under graduate students. The level of satisfaction regarding the use of (i) available resources like books, journals, back volumes etc. (ii) available online resources and (iii) resources accessed through ICT means is identified and assed as mentioned in objectives.

7. Recommended the suitable ways and means to improve the services and suggested an information system for providing better services to users of engineering college Libraries of both the Divisions as per the objective statement point 7.

5.5 SUGGESTIONS

Based on the findings of this study and personnel discussion with the users, few suggestions are put forth.

- Libraries must subscribe sufficient number of copies of text and reference books and journals/magazines and periodicals related to research and Post Graduate courses. PG students and researchers should be encouraged to access all the scholarly journals such as IEEE, ASME, ACM, SAE, and ASCE depending on the suitability of the journals based on their department.

- Libraries should have its own web portal with good internet plan for fast access of online resources. More and more information literacy programmes should be conducted by the libraries to enable the effective use of library portal.

- User education-cum-training program can be arranged time to time for the better use of library resources including back volumes, projects/thesis/reports, question banks and CDs/VCDs/DVDs, and for adaptation of new or contemporary technologies for library personals and users both.

- The faculty members may be instrumental to motivate the students to visit library and they must put more efforts to drive students to library. Faculty should also be aware about the library collection and services. Librarian should encourage the faculty members for awareness of use of library. The updates of resources shall be regularly circulated among faculties.

- Library hours and after college hours are to be increased since more students prefer to visit library during these hours and a suggestion box must be fixed in the library

- Automation of libraries with implementation and popularization of web OPAC facility must be taken on primary basis.

- A digital library section must be created in the engineering college library and Users should be motivated to make use of information technology enabled services for seeking for information. It is also suggested that training of the available of ICT resources and its uses must be organised, for the student, for the better use of ICT facilities in the library. Library staff should be trained with latest technology. E-resources should be arranged and listed on the library webpage which are to be available in the library.

- Resource sharing through DELNET, ILL service, book bank service and photocopy service need to be improved and the respondents should be educated about using these services effectively.

- Library staff must be increased so that they can help the students on request, they should come forward to help the users voluntarily. In this connection, periodical programs can be conducted for library staff.

5.6 SCOPE FOR FUTURE RESEARCH

Based on the study conducted, following areas are identified for future research:

- A comparative study can be carried out on the information seeking behaviour between the students of Engineering and other course (like management) which are being offered in the technical universities

- The study can be extended to all engineering colleges of the Rajasthan state.

- ICT impact on the information seeking behaviour of the users can be studied further in more detail for engineering colleges.

- A comparative study can also be carried out on the information seeking behaviour of students of institutes of national importance (like IIT, IIM, NITs etc. which are rich in facilities) and other regional engineering colleges

5.8 PROBABLE MODEL FOR INFORMATION SEEKING BEHAVIOUR OF USERS OF ENGINEERING COLLEGES

In most of the engineering colleges the information seeking is target oriented, and it is classified in 3 categories viz (i) Academic (ii) professional (iii) General, which affect the information seeking behaviour of any individual user. This behaviour is responsible for the selection of an information source. Again the sources are categorised as Library, Faculty, Personnel and Internet. Here the faculty members are also treated as the source of information. After selection of source the individual get the information and if he/she is successful in getting the required information then the individual use and share the obtained information which again fulfill the need of other users. On the other hand, if the user is fail in getting the information then he/she move to another / alternate information source. A model for information seeking behaviour is presented in the Figure 5.2 which reflects the characteristics of the information seeking trend in engineering colleges users. Here if the information found to be satisfactory then it is shared and transferred to different other users.

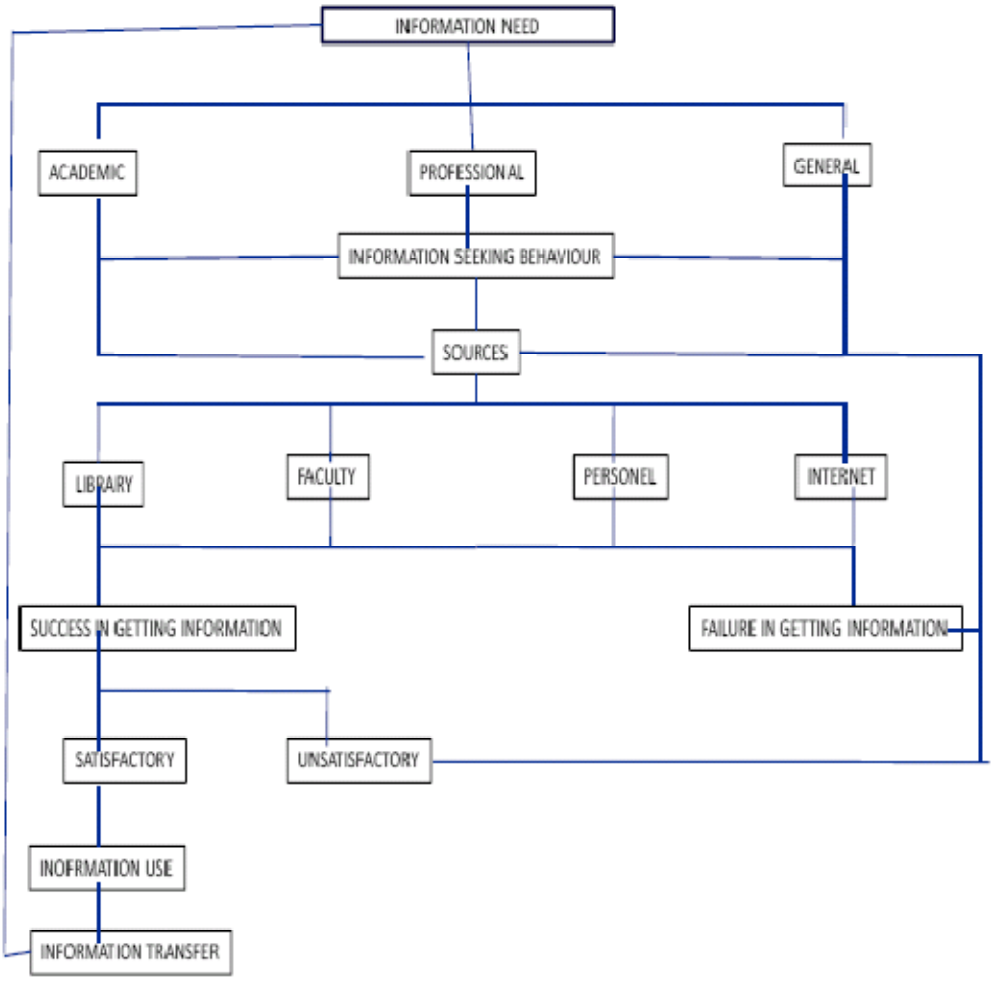


Figure 5.2 : Model of Information Seeking Behaviour of Users of Engineering Colleges.

5.8 CONCLUSION

It is thus concluded that the information seeking behaviour is motivated by wide variety of needs such as academic, professional or personal. It is also clear from the study that information needs and information seeking behaviour of respondents is very heterogeneous in nature. A larger part of the respondents in engineering colleges is motivated by the academic need followed by professional or general need. Most of the respondents prefer Internet as their main source of information seeking. Libraries are also playing a vital role in both providing the

information and affecting the information seeking behaviour. It is found in the study that after internet the text books are the most important information resources among the respondents followed by newspapers / magazines and online resources. The least important information source is CD/DVD etc.

Majority of the respondents find their own way to get the information in library and they also expressed that training is required for awareness to library resources and services and for the use of library catalogue /OPEC.

Satisfaction level regarding the resources, services and facilities provided by the engineering institutions in and around Kota is higher than the Udaipur region. The difference of opinion is clearly observed among the respondents of both the regions in using the e-resources. The successful running of the library depends on the type of library collection, other facilities and awareness of these among the users. The library resources should meet the need and requirement of the users.

From librarian point of view, the study concludes that librarians shall be given regular training for updates in technology so that they may facilitate few short term courses/ programmes on information seeking compulsory for users in every college. Such courses or programmes may help in improving the awareness level and information seeking behaviour of users. It is also reflected from the resources and services that libraries are lacking of the manpower and financial budget allocation.

A model reflecting the information seeking behaviour is proposed for the users of engineering colleges of Kota and Udaipur regions. The model identifies three types of information needs among users i.e., Academic needs, professional needs and General needs. The identified sources of information like library, faculty, personal and internet are used in the model. If any user fails to get the right information from these sources then either he/she modify the search criteria or change the source of information.

The study concludes that information seeking behaviour of users in engineering colleges are depend largely on their need of library resources and their knowledge/ awareness regarding retrieval process. More and more efforts shall be made by the college to improve the knowledge base of students for use of available resources so that they make a habit of using different libraries for fulfillment of their needs.

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❑❑❑

QUESTIONNAIRE

Appendix-1

Questionnaire (Users)

A) Personal Information

01. Name and Gender : _____
: Male ☐ Female ☐

02. Status : Faculty ☐ Research Scholar ☐
M.Tech Student ☐ B. Tech. Student ☐ Other ☐

03 Name of Institute : _____

04. Department and Semester _____

05. Name of the course : _____

06. Are you hostler? : Yes ☐ No ☐

B) About the Library Services

7. **Primary purposes of seeking information**

A. Academic ( ) B. General ( ) C. Project / Research ( )
D. Placement ( ) E. Higher Studies ( ) F. Preparation of papers for Conference / Workshop ( ) G. Others Please Specify: _____

8. **Please mention your primary sources of information and levels of Dependency**

S.No.	Dependency	Library	Faculty	Personal	Internet	Other (Specify)
1	Continuously Dependent Source					
2	Frequently Dependent Source					
3	Fairly Dependent Source					
4	Occasionally Dependent Source					

9. **You have separate reading room in your library-**

A. Yes ( ) B. No ( ) C. Need ( ) D. No Need ( )

9 (a). If yes, you use the reading room facility of the library for-

A. Reading Reference books : Yes ( ) No ( )

B. Assignment writing : Yes ( ) No ( )

C. Computing Facility : Yes ( ) No ( )

D. Examination preparation : Yes ( ) No ( )

E. Other (Please specify) : _____

10. Which of the following mode of access you prefer over others in seeking information?

A. Print Mode ( ) B. Online ( ) C. Both ( ) D. Any Other (Pls Specify) _____

11. Do you feel language as a barrier in seeking your information?

A. Yes ( ) B. No ( )

11 (a). If yes, Please mention how it affects your Information seeking:

12. Your Visiting Behaviour to the Library is driven by

A. Habit ( ) B. Motivation from Faculty ( ) C. Library Hours ( )

D. Awareness Created through librarians ( ) E. Library Atmosphere ( )

13. Do you feel training is essential for accessing the library materials?

A. Yes ( ) B. No ( )

14. How often you visit library for various purposes (given below)?

Sl.No.	Purpose	Daily	Weekly	Fortnightly	Monthly	Quarterly	Not at all Visiting
1	Borrowing Books						
2	Access Periodicals						
3	Access Reference resource						
4	Project / Thesis/ Reports						
5	Read News Paper						
6	Access Online resource						
7	Access CDs / VCDs / DVDs						

15 . Please mention the amount of time you spent in getting your information from the following sources in a week?

Sl.No.	Source of Information	Upto 5 Hrs.	6 – 10 Hrs.	10 Hours and more
1	Reading Text Books			
2	Reading News Paper			
3	Reading Reference Resources			
4	CDs / VCDs / DVDs			
5	Online Resources			
6	Collecting information from Back Volumes			

16. Which of the following timings you feel convenient to seek information at the library?

S.No.	Sources	Highly Convenient	Fairly Convenient	Slightly Convenient	Not Convenient
1	Library Hours				
2	Before College Hours				
3	After College Hours				
4	During Sundays				
5	During Holidays				

16.(a) Please comment on the need of extra hours, timings of library etc.

17. Which of the following source you prefer over others for your Academic / General purpose?

S.No.	Sources	Highly Preferred	Fairly Preferred	Slightly Preferred	Not at all Preferred
1	Books				
2	Journals/Magazine				
3	Newspapers				
4	Back Volumes				
5	Project/Thesis/Reports				

18. **Kindly give your opinion on your library Collection**

S.No.	Sources	Highly Sufficient	Sufficient	Slightly Sufficient	Not at all Sufficient
1	Books				
2	Journals/Magazine				
3	Newspapers				
4	Back Volumes				
5	Project/Thesis/Reports				
6	CDs/VCDs/DVDs				
7	Online Resources				

19. **Please rate the services offered by the library?**

S.No.	Services	Excellent	Good	Fair	Needs Improvement
1	Circulation				
2	Reference Service				
3	OPEC				
4	Current Awareness Services				
5	Digital Library services				
6	Bibliographic Information				
7	Inter Library Loan (Delnet)				
8	Book Bank Services				
9	Photo copy				
10	Printing				
11	Other(Please specify)				

20. **The number of books issued to you from the library, are sufficient:**

A. Yes ( ) B. No ( )

21. **How do you feel about the services provided by the library staff?**

A. Very Helping ( ) B. Help on request only ( )

C. Give oral direction only ( ) D. Help only on librarian's Instructions ( )

E. Neglecting and Non-caring ( )

22. **Please indicate your satisfaction level on the arrangements and Retrieval the following resource?**

Sl. No.	Resource	Highly Satisfied	Satisfied	Slightly Satisfied	Not at all Satisfied

1	Books				
2	Reference resource				
3	Periodicals				
4	News Paper				
5	Project / Thesis Reports				
6	Question Bank				
7	CDs / VCDs / DVDs				
8	Online Resource				
9	Others, Please Specify				

23. Please name your favourite Journals / Magazines you read for Academic and General purpose and mention frequency of referring them? Specify your choice.

Academic Purpose		Frequency of Access (Daily, Weekly, Monthly, etc.,)
1		
2		
General Purpose		**Frequency of Access (Daily, Weekly, Monthly, etc.,)**
1		
2		

C) ICT USE IN LIBRARY

24. Are you familiar with the uses of electronic resources and services in the library?

A. Yes B. No

25. Please mention your level of convenience in using following Information and Communication Technology (ICT) facilities of your Library?

S.No.	Facilities	Highly Convenient	Convenient	Fairly Convenient	In Convenient
1	Computers				
2	e- journals				
3	Internet				
4	e- library				
5	E-Thesis				
6	DELNET				
7	Other (Please Specify)				

26. **Does the library staff help you while searching any information on the Internet/computer if Required**?

A. Yes ( ) B. No ( )

27. **Do you feel training is essential for use the digital resources which are available in the library?**

A.. Yes ( ) B. No ( )

28. **How do the above electronic / modern facilities affect your information seeking behaviour / Information gathering habits?**

A. I am not interested in using the technology rather than going straightaway to the resource by institution ☐

B. I am not given proper training / information in making use of them. ☐

C. The retrieval of e – sources consumes much time in getting right information I need, since the search lists large number of relevant and irrelevant information. ☐

D. I feel comfortable in getting my information within right time using the e – facilities. ☐

29 **Which of the following internet services, you use most to get information**?

S.No.	Service	Continuously	Frequently	Occasionally	Rarely
1	e-mail				
2	Search engine				
3	Blog				
4	List- Serve				
5	Messenger				

D) OPINIONS OF USER (Please tick which apply)

30. Please select any of the following opinions you feel relevant, which affect Information Seeking Behavior

S.No.	Opinion	Please Tick
1	Language is a barrier for seeking information	
2	Collection of non book materials have to be increased	
3	Lack of e- resources in the library	
4	Library staff do not show interest in helping the students	
5	Lack of encouragement affects usage of libraries	
6	Lack of training to make use of library technology affect getting required information	
7	Availability of Back Volumes have to be familiarized among student	
8	Non book material have to be arranged in an easily retrievable manner	
9	Reprographic service needs to be improved	
10	Lack of encouragement affects usage of libraries	
11	Other (please specify)	

31. If you face any difficulty from the library services for seeking information, please mention-

_____

32. What would be the most effective way for the library to keep you informed in your area of specialization?

_____

33. Please feel free to comment/suggestion anything in your mind regarding Information Seeking Behaviour library system etc

_____

Questionnaire (Librarians)

TOPIC - Information Seeking Behaviour of Users: A Comparative Study of Engineering Colleges of Kota and Udaipur Division

Personal Information

1. **Name** : ----------

2. **Gender** : Male ☐ Female ☐

3. **Designation** :

4. **Name and Place of your Institution :**

5. **Academic Qualification:**

6. **Professional Qualification :**

7. **Professional Experience**

   A. Up to 5 yrs. ☐ B. 6-10 yrs ☐ C. 11-15 yrs. ☐
   D. 15-20 yrs. ☐ E. Above 20 yrs. ☐

8. **Are you a member of any professional body/ organization?**

   A. Yes ☐ B. No ☐
   If Yes Please Specify .....

Library Personal

9. Indicate the number of book collection in the library-

   A. Up to 10000 ☐
   B. 11000-20000 ☐
   C. 21000-30000 ☐
   D. 31000-40000 ☐
   E. 41000-50000 ☐
   F. Above 100000 ☐

10. Periodicals subscribed in the library are-

A. Indian: (a) Up to 25 ☐ (b) 26-50 ☐ (c) 51-75 ☐
(d) 76-100 ☐ (e) More than 100 ☐

B. Foreign: (a) Up to 25 ☐ (b) 26-50 ☐ (c) 51-75 ☐
(d) 76-100 ☐ (e) More than 100 ☐

11. Working hours of the library-

(A) 8am to 8pm ☐
(B) During office hours ☐
(C) 24 Hours ☐
(D) 10am to 10am ☐
(E) Other (Please mention) ☐

12. Indicate total number of staff -Number Mention

A. Librarian ☐
B. Deputy Librarian ☐
C. Assistant Librarian ☐
D. Technical staff ☐
E. Others ☐

13. Staff is sufficient-

A. Most sufficient ☐
B. Sufficient ☐
C. Not sufficient ☐
D. Lacking ☐
E. Need More ☐

14. If not what problem do you face due to the lack of staff -

A. Work load on the other staff is increased ☐
B. Technical work cannot be completed in prescribed time ☐
C. The requirement of the user cannot be fulfilled ☐
D. For accession there is problem ☐
E. Finding arrangements of books often completion of library hours.

15. Books are classified -

A. Yes ☐ B. No ☐ C. Arrangement in process ☐
D. Semi classified ☐ E. Not required ☐

If yes, which scheme of classification is used Please specify : ----------

16. **Sections are there in the library – (Tick all the apply)**

A. Requisition ☐
B. Reference ☐
C. Technical ☐
D. Circulation ☐
E. Periodical ☐
F. Documentation ☐
G. Computer section ☐
H. E – Library ☐
I. Other (Please specify) _____

17. **Your library maintains the catalogue of other source of searching –**

A. Yes ☐ B. OPEC ☐ C. Computerized catalog ☐
D. Display list ☐ E. No ☐

18. **You have separate library building -**

A. Yes ☐ B. No ☐
C. common ☐ D. Separate reading room ☐
E. Separate books display shift room ☐

19. **Facility of reading room in your library-**

A. Yes ☐ B. No ☐

Library Services

20. **Is your library fulfill all the requirement as per the AICTE rules for the library-**

A. Yes B. No

21. **You provide reference service to your readers -**

Yes B. No C. By email
D. When required E. Not demanded

22. **Facilities are provided for documentation –(Tick all the apply)**

A. Photocopy ☐ B. Microfilm ☐ C. Translation ☐
D. Indexing ☐ E. Abstracting ☐ F. SDI ☐
G. CAS ☐ H. Any other ☐

23. **Library organizes the educational programs / Seminars/ workshop etc. for users for the better use of e-resources**

A. Continuously ☐ B. Frequently ☐ C. Once in a year ☐

D. Twice in a year ☐ E. Never ☐

24. **Library organizes the educational programs / Seminars/ workshop etc. for the library professional for the better services in library**

A. Continuously ☐ B. Frequently ☐ C. Once in a year ☐

D. Twice in a year ☐ E. Never ☐

25. **The books issued at a time to each of the following categories of readers are and for how many days-**

Category		No. of books	Period
A.	Teachers/organization members	.....	.....
B.	Research scholars	.....	.....
C.	Students (U.G. and P.G.)	.....	.....
D.	Non teaching staff	.....	.....
E.	Any Other	.....	.....

Advanced Technology in Library

26. **Status of the Automation**

A. Fully ☐

B. Initial stage ☐

C. Semi ☐

D. Not Yet ☐

E. No Need ☐

Mention the Software do you use for Automation: ----------

27. **Electronic Sources and Services for users provide by you in your library (Tick all the apply)**

A. Internet ☐

B. E-Books ☐

C. E-Journals ☐

D. E-Thesis ☐

E. Printing ☐

F. CD/DVD ☐

G. Inter Library Loan (ILL) ☐

H. OPEC ☐

I. DELNET ☐

28. **Your library is a member of any library network-**

A. Yes ☐ B. No ☐

If Yes Please Mention: _____

29. **Mention the numbers of following e-resources and please tick if you satisfied with the numbers of following sources-**

	Sources Numbers	Satisfaction
A. Computers	____	Yes ( ) No ( )
B. E-Books	____	Yes ( ) No ( )
C. E-Journals	____	Yes ( ) No ( )
D. E-Thesis	____	Yes ( ) No ( )
E. CD/DVD	____	Yes ( ) No ( )
F. Other Database	____	Yes ( ) No ( )

30. **Are the users are familiar with uses of electronic resources and services?**

A. Yes ☐ B. No ☐

31. **Does the library have its own web page-?**

A. Yes ☐ B. No ☐

32. **Does the users have individual login for the e- resources accessing ?**

A. Yes ☐ B. No ☐

Satisfaction

33. **You are satisfied with allocation of budget for the library -**

A. Fully satisfied ☐ B. Partially satisfied ☐

C. Not satisfied ☐ D. No comments ☐

34. **According to your opinion point the users are satisfied with the library collection-**

A. Yes ☐ B. No ☐ C. Partially satisfied ☐

D. Fully satisfied ☐ E. N E Comments ☐

35. **According to your opinion point the users are satisfied with the library services –**

A. Yes ☐ B. No ☐ C. Partially satisfied ☐

D. Fully satisfied ☐ E. No Comments ☐

36. **If not, then what is the reason - (Tick all the apply)**

A. Lack of books. ☐
B. Lack of journals. ☐
C. Lack of staff. ☐
D. Lack of reference service. ☐
E. Lack of periodicals ☐
F. Lack of computers ☐
G. Lack of e- resources ☐
H. Slow internet speed ☐
I. Lack of knowledge of uses of E- Resources ☐

37. **Do you think language is a barrier in seeking the information for users?**

a. Yes ☐ B. No ☐

38. **If yes, which language most of the users prefer in Information seeking-**

a. English ☐ B. Hindi ☐

Please mention if any other _____

39. **The suggestion box placed at appropriate place for receiving suggestions regarding library services**

A. Yes ☐ B. No ☐ C. By OPEC ☐
D. By e-mail ☐ E. By SMS ☐

D) **OPINIONS OF LIBRARIAN** (Please tick all the apply)

40. **Please select any of the following opinions you feel relevant, which affect Information Seeking Behavior for the user-**

S. No.	Opinion	Please Tick
1	Language is a barrier for seeking information	
2	Collection of non book materials have to be increased	
3	Lack of e- resources in the library	
4	Library staff do not show interest in helping the students	
5	Lack of encouragement affects usage of libraries	
6	Lack of training to make use of library technology affect getting required information	

7	Availability of Back Volumes have to be familiarized among student	
8	Non book material have to be arranged in an easily retrievable manner	
9	Reprographic service needs to be improved	
10	Other (please specify)	

41. If yes, in which area maximum complaints are received in compliant box -

(i)……

(ii)……

42. Regarding information seeking which problems are faced most by user-

(i)……

(ii)……

43. The Suggestion(S) in your mind to solve their problem(S) are -

(i)……

(ii)……

Appendix-2

List of Publications

The present thesis entitled "**Information Seeking Behaviour of Users: a comparative study of engineering colleges of Kota and Udaipur division**" consists of the following research papers:-

1. Payal Joshi and Umesh Kumar Agarwal (2016) "A Study of Information Need and Seeking Behaviour of Science Students at Government Institutions in Rajasthan (India)" International Journal of Information Sources and Services, 3(1),80-89

2. Payal Joshi and Umesh Kumar Agarwal (2016)"Information-Seeking Behaviour of Engineering Students and Their Adaptation To Electronic Resources" Indian Journal of Research 5 (8), 284-86

3. Agarwal U.K., Kaushik Anna and Joshi Payal, (2014) " Role of Library in promoting the reading culture", National Conference on Role of Libraries in Indian culture and Management, University College of Science, MLS University, Udaipur, 409-417.

4. Agarwal U.K. and Joshi Payal, (2015), "Evaluation of Internet Information Resources", National Conference on Changing role of libraries in digital era. Jointly organized by Shri Sanmati Pustakalaya Jaipur and Jaipur Library and Information Society, JALIS.